THIRD SERIES VOL 67 NUMBER 3 JANUARY 1960

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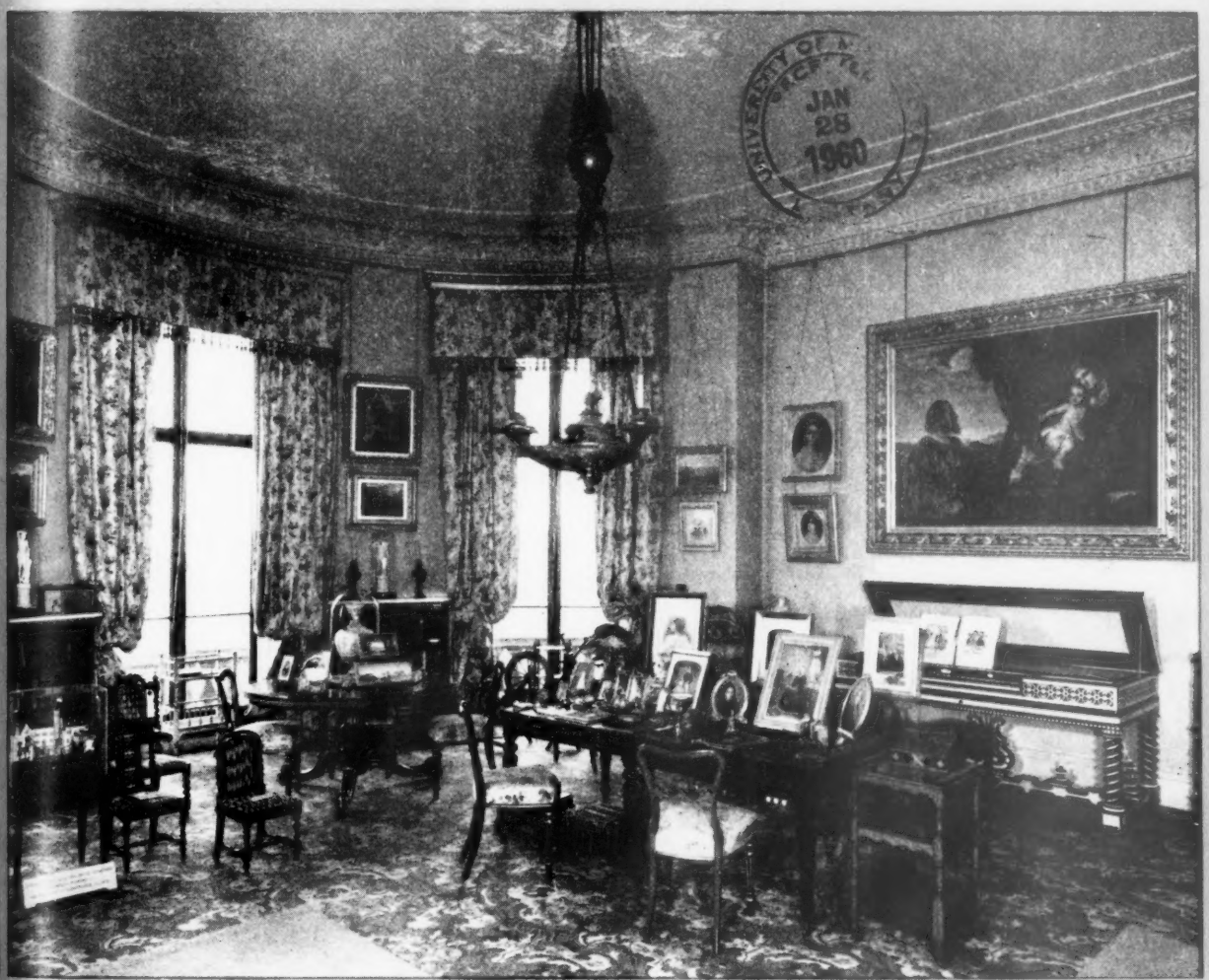

Osborne House, I.O.W.: Queen Victoria's Private Sitting-room

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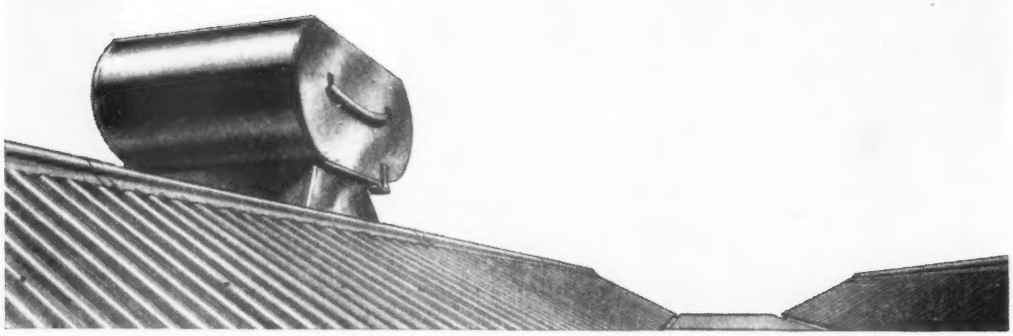

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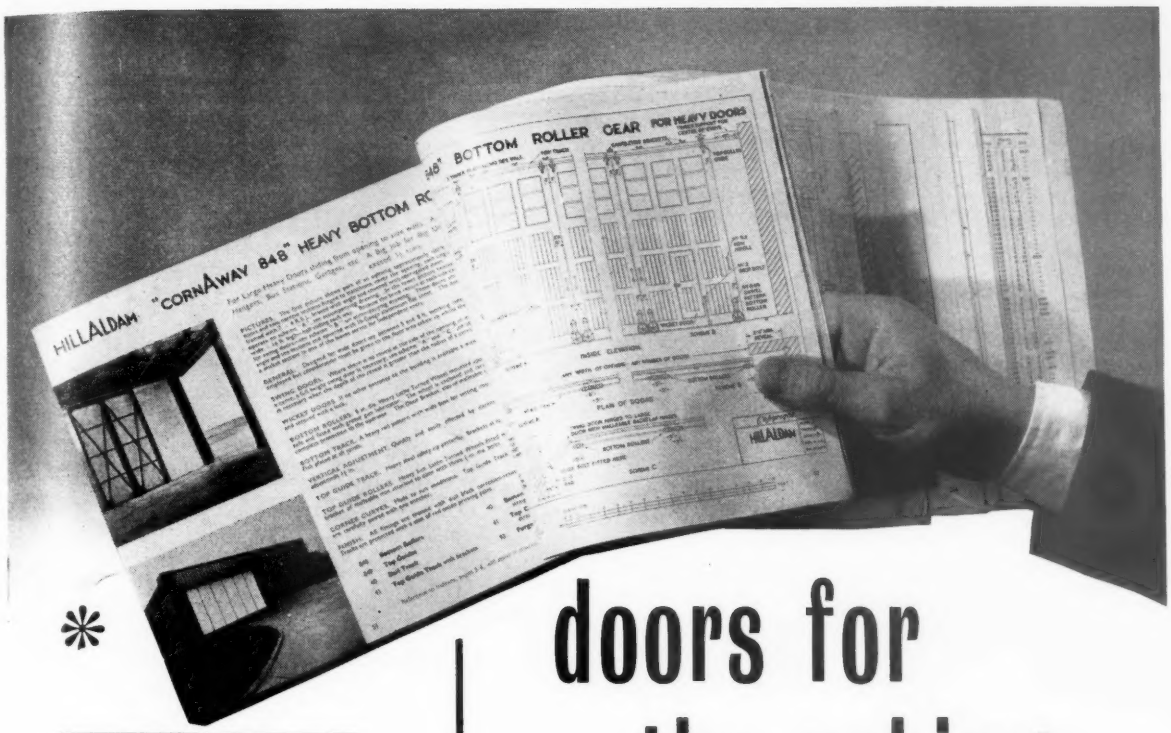

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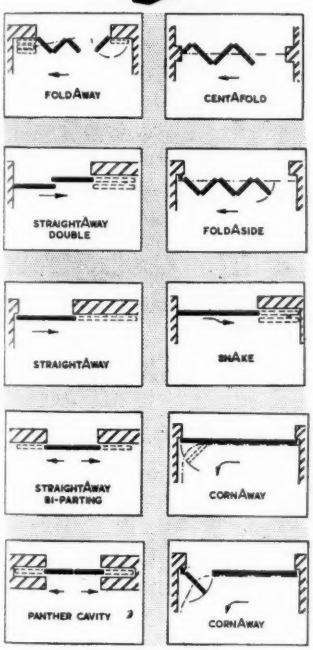

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—already taking shape with

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ALUMINIUM

The windows of today and tomorrow made of ALCAN aluminium are better than ever before. In their natural clean finish, or colourfully anodised they will present no problems of rust and lessen the cost of maintenance.

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ALUMINIUM LIMITED OF CANADA

To the architect and designer

ALCAN aluminium means:

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- *Windows opening up new horizons in planning and design but right down-to-earth in sheer practicality*

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- *No needless weight – windows that are* always *easy to open*
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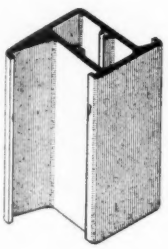
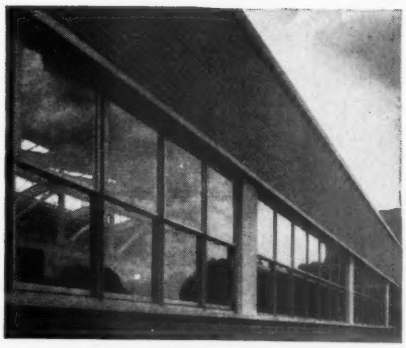
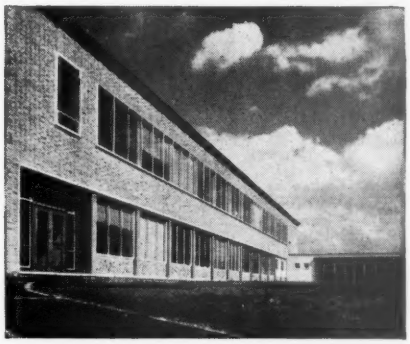


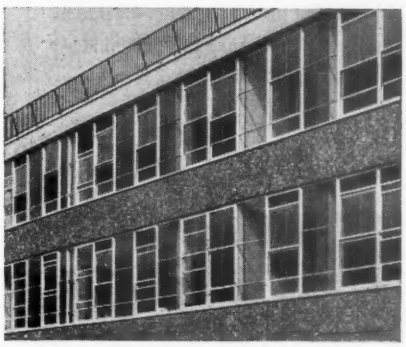
A typical example of an extrusion for aluminium windows.



HOPE'S *aluminium double-hung sliding sash windows, made entirely from extruded sections were used in this Comprehensive High School for the L.C.C. at Wandsworth.*
Architects: Hening & Chitty.



The B.O.A.C. Air Training School at Hounslow is another example of the use of aluminium windows. Here, HOPE'S *windows have been built into wooden frames.*
Architect: F. Greenwood, A.R.I.B.A.



HENRY HOPE & SONS LTD., *supplied the aluminium double-hung sash windows and aluminium casement windows for the Manor Laundry, Camberwell.*
Architects: Stone, Thoms & Partners.

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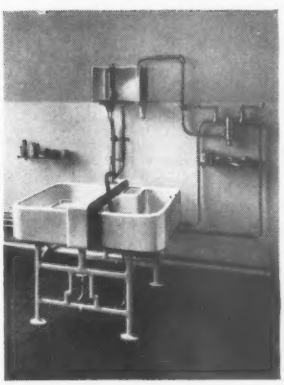

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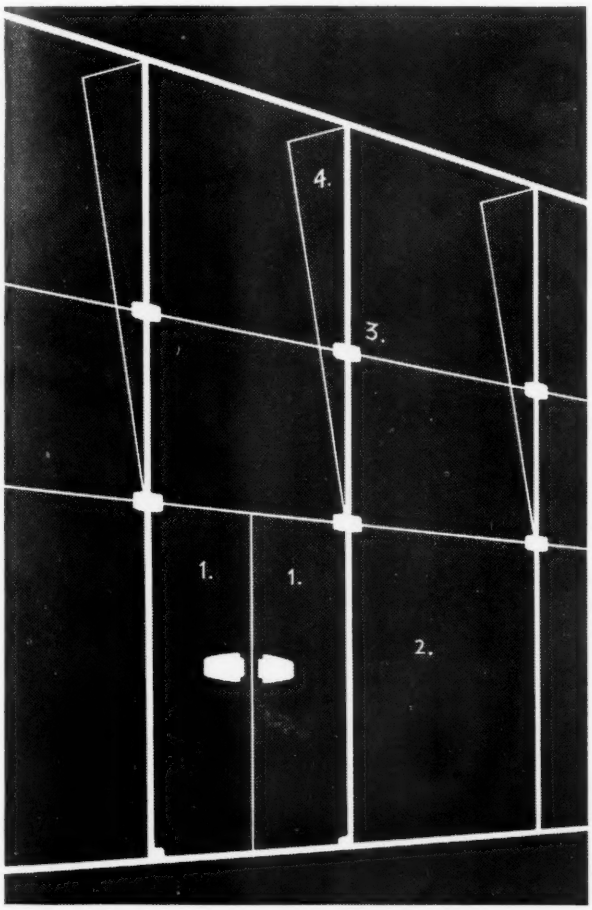

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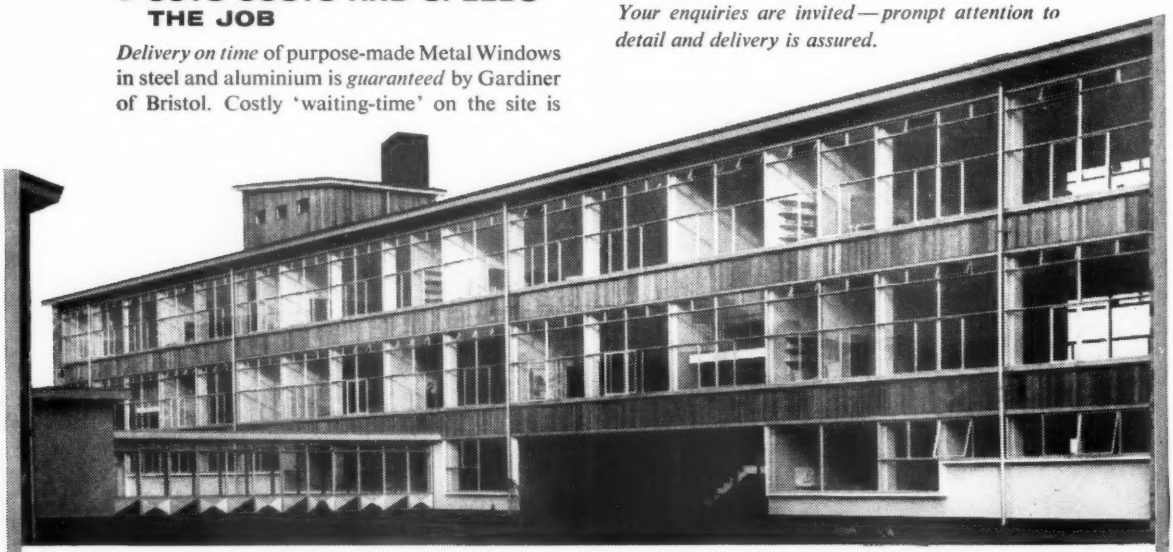

The Intermediate School for Boys at Melmount, Strabane, Co. Tyrone. For the Very Rev. G. Faulkner, P.P. Architects: F. M. Corr, B.Arch., A.R.I.B.A., A.M.T.P.I., and W. H. D. McCormick, Dip.Arch., A.R.I.B.A., M.R.I.A.I.

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the basis of
modern flue
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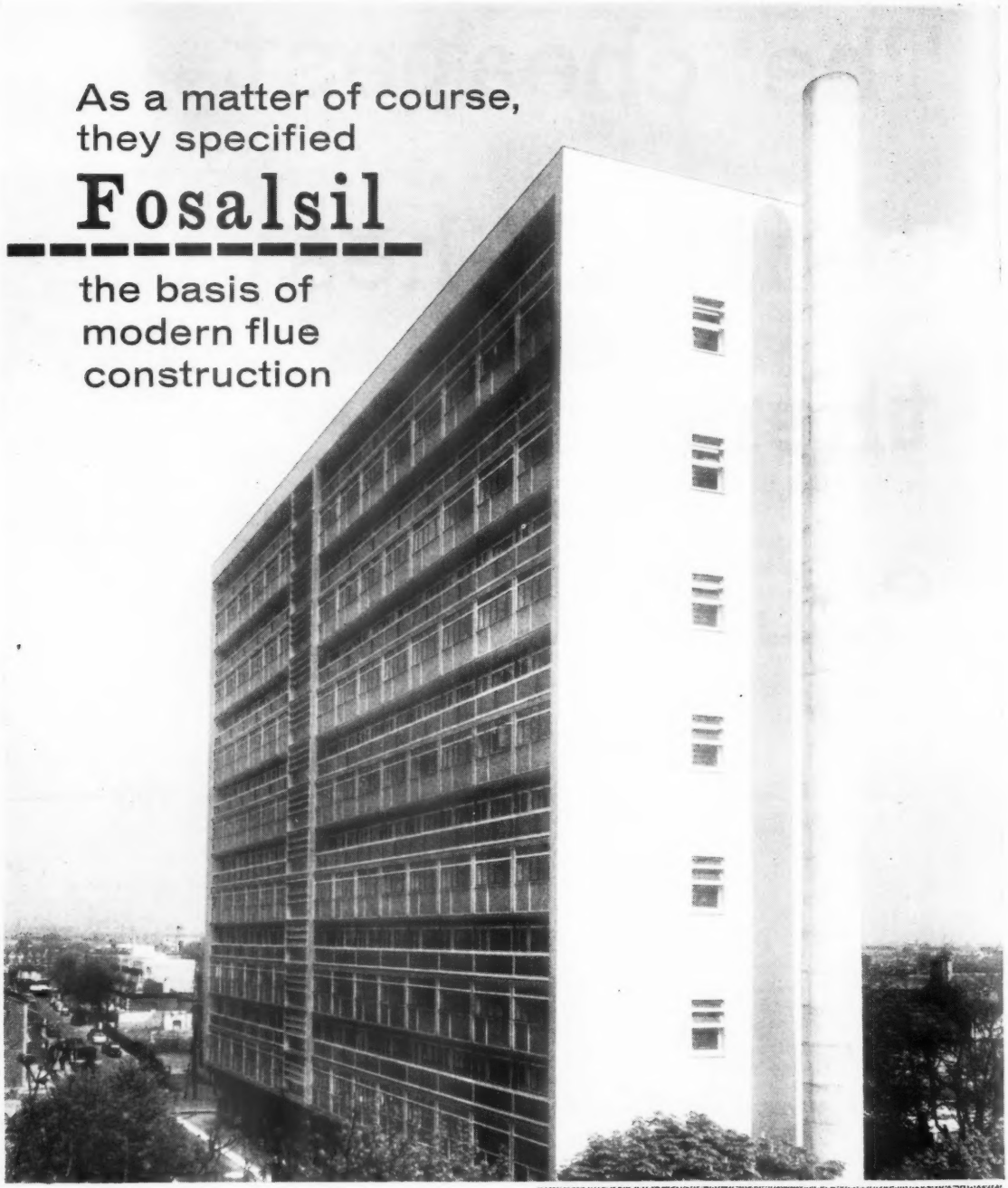

Camberwell House Re-development, Dalwood Street, Camberwell, S.E.5. 6" Fosalsil Flue brick lining forming permanent shuttering to R.C. shell.

Architect: F. O. Hayes, A.R.I.B.A., Borough Architect, Camberwell Consultant Structural Engineer: W. V. Zinn, M.Cons.E., B.Sc., M.I.C.E., M.I.Struct.E., M.E.I.C. (Canada), H.Soc.C.E. (France).

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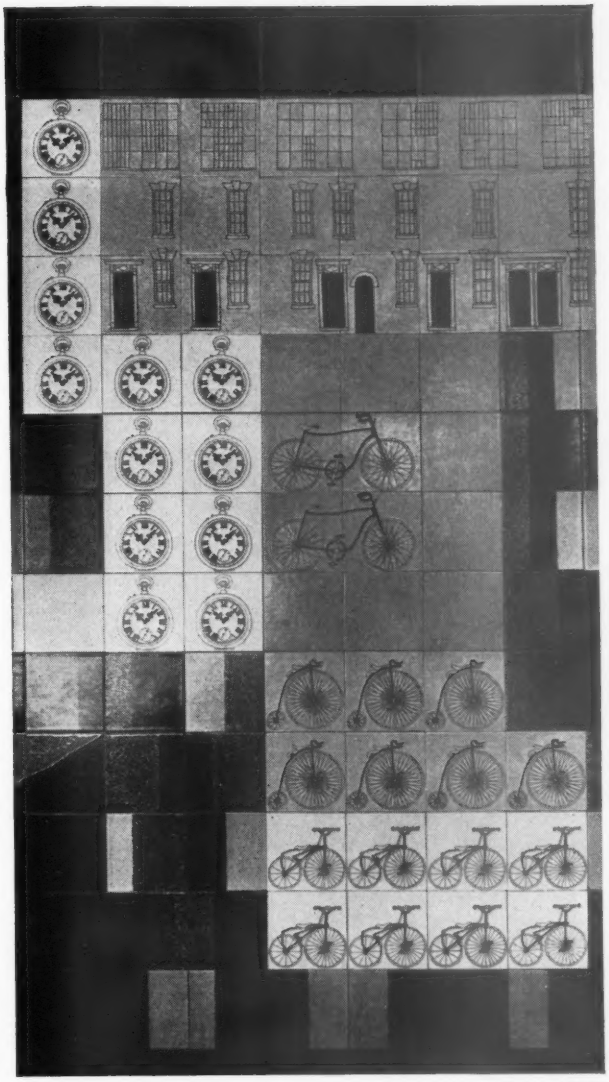

Eric de Mare

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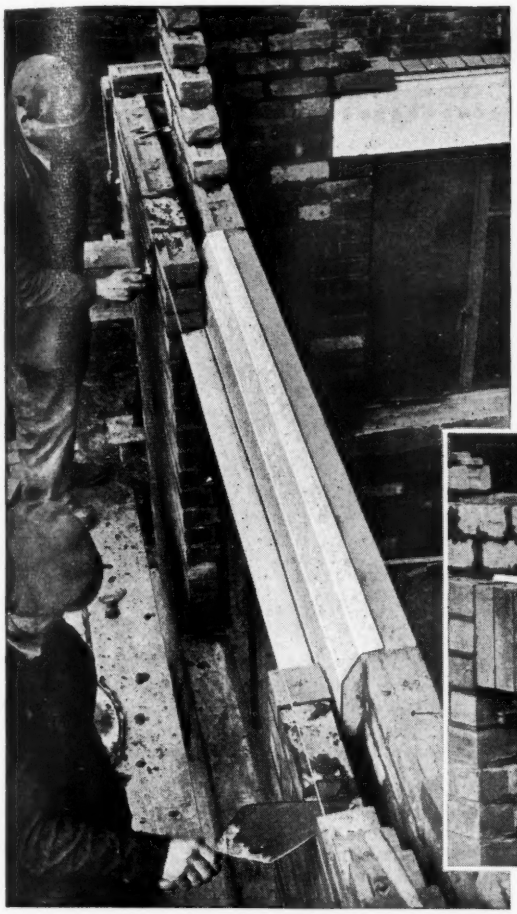
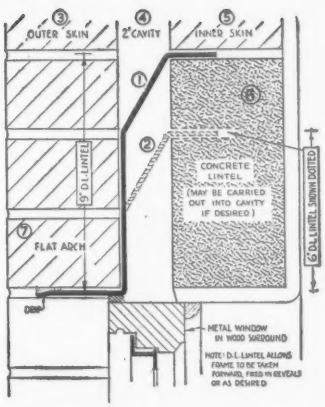


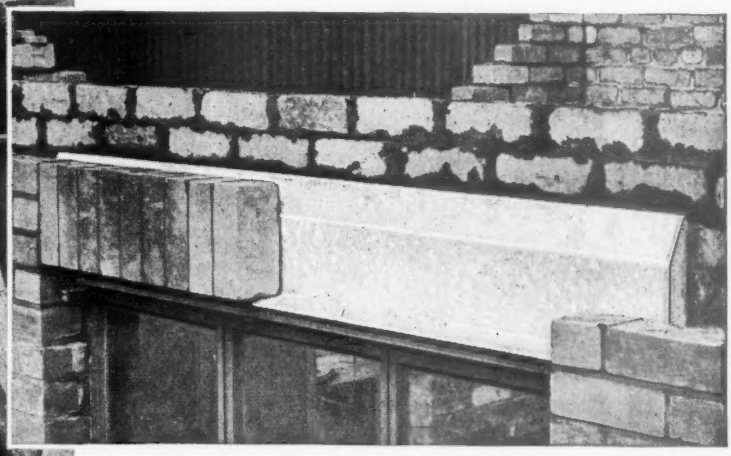
SECTION SHOWING TYPICAL DETAIL

(1) 9 in. Dorman Long Lintel
(2) 6 in. Dorman Long Lintel (shown dotted)
(3) Outer skin
(4) Cavity
(5) Inner skin
(6) Inside concrete lintel (carried out into cavity if so desired)
(7) Flat arch

The wide 'turn-in' of the Dorman Long Lintel allows the cavity to be varied from 2 in. to 2¾ in. in width.

Patent No. 694214


3 OUTER SKIN
4 2" CAVITY
5 INNER SKIN
1
6
2
9" D.L. LINTEL
CONCRETE LINTEL (MAY BE CARRIED OUT INTO CAVITY IF DESIRED)
7 FLAT ARCH
6" D.L. LINTEL SHOWN DOTTED
DPC
METAL WINDOW IN WOOD SUBSOUND
NOTE: D.L. LINTEL ALLOWS FRAME TO BE TAKEN FORWARD, FIXED IN REVEALS OR AS DESIRED



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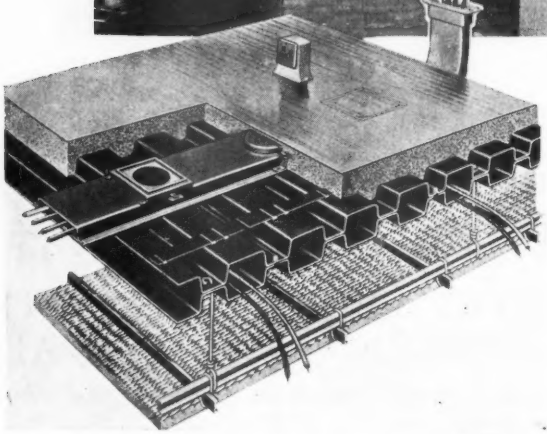

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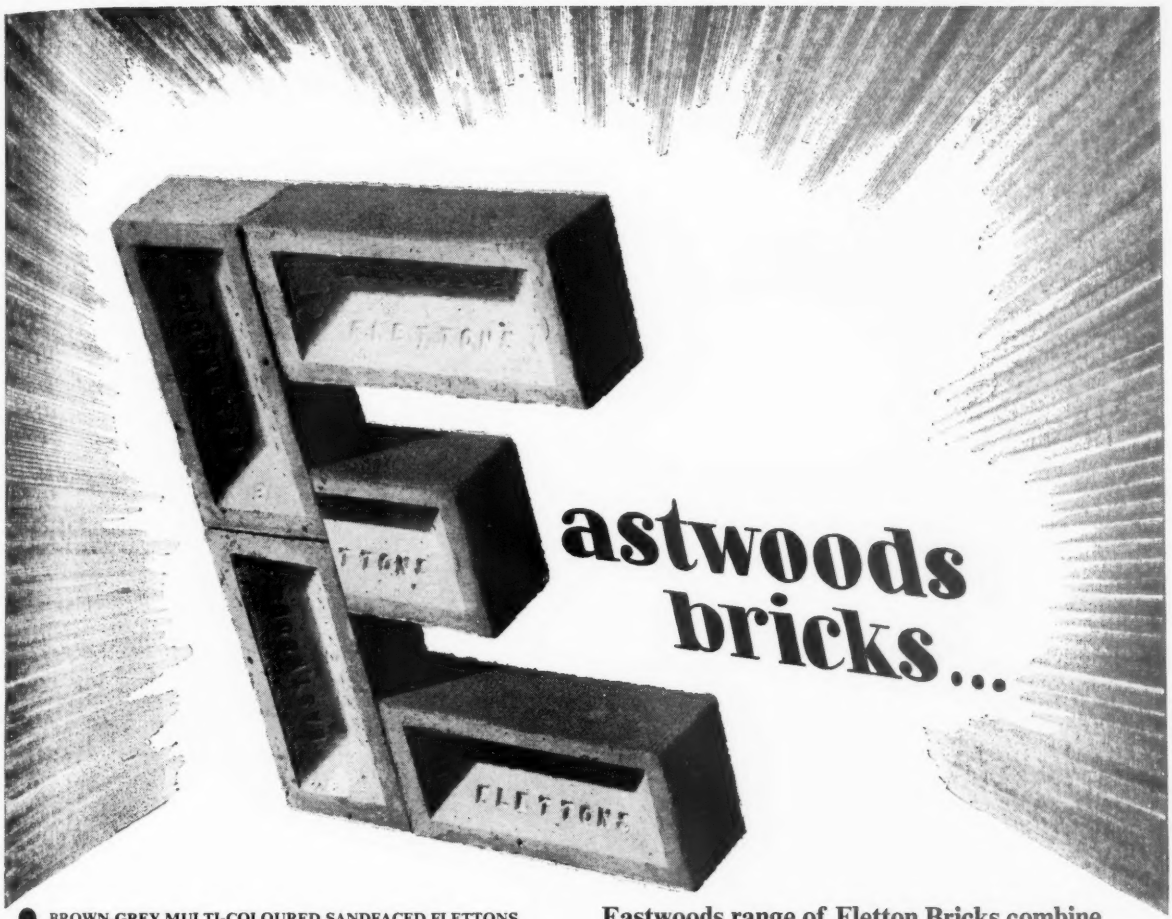

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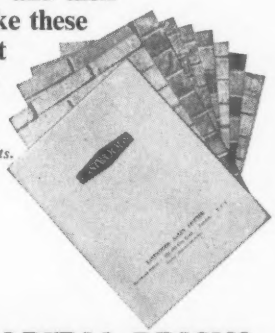

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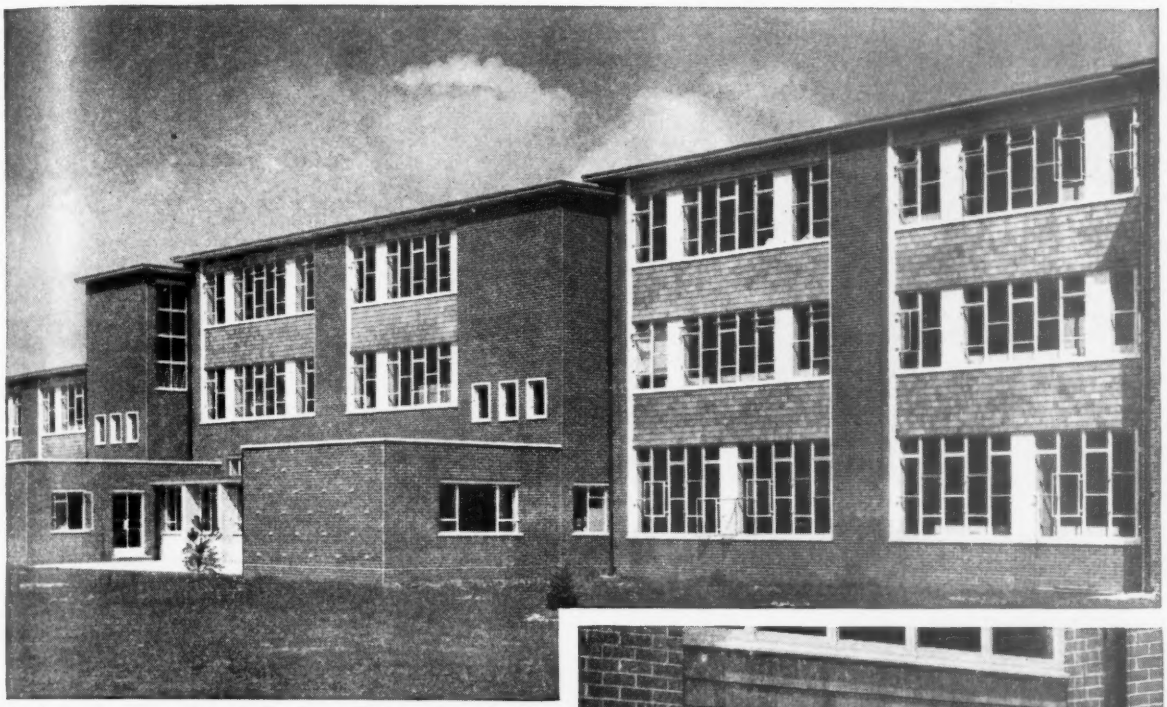

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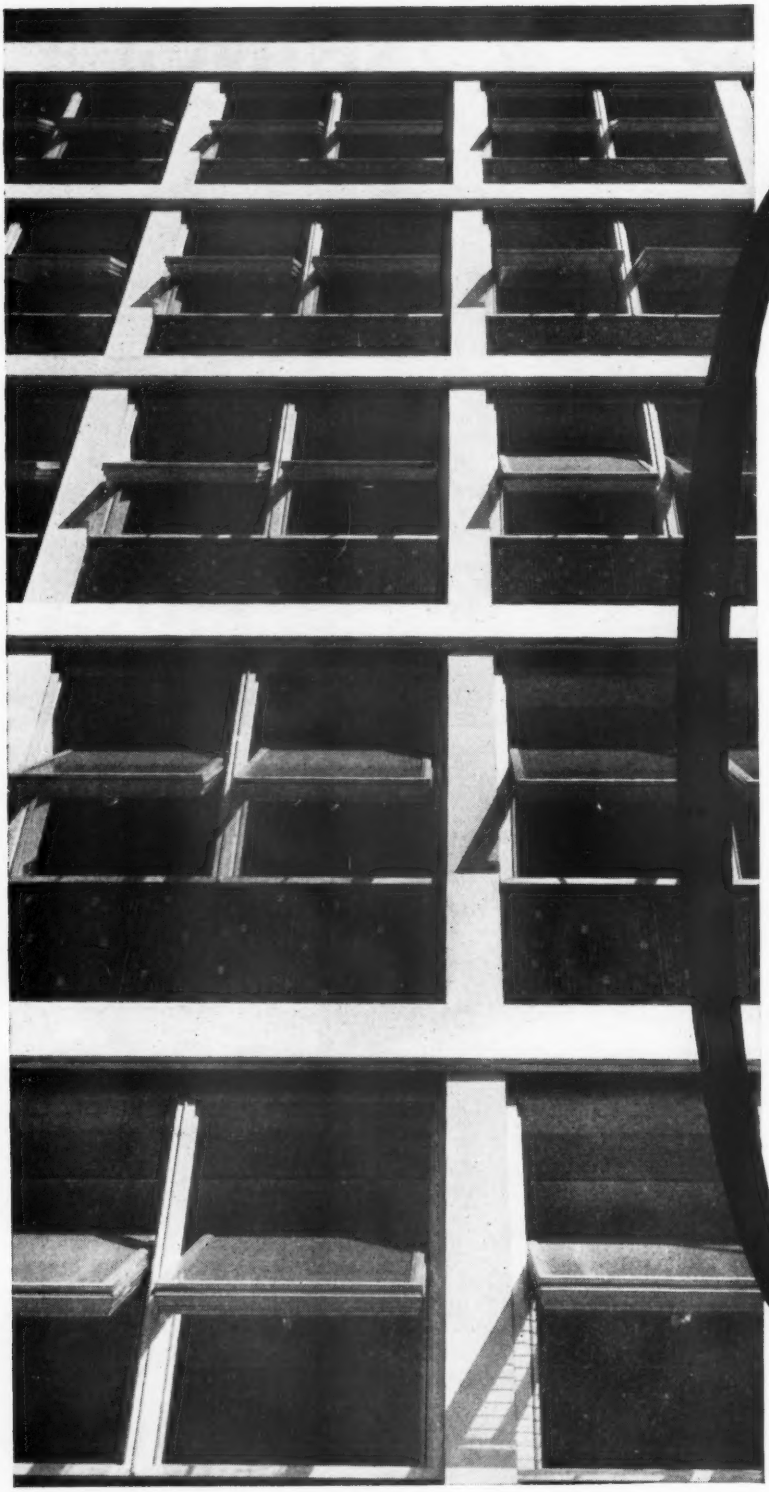

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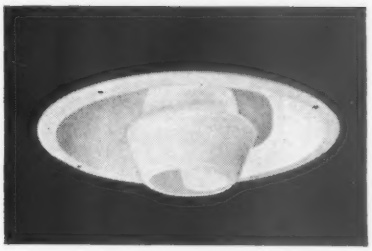

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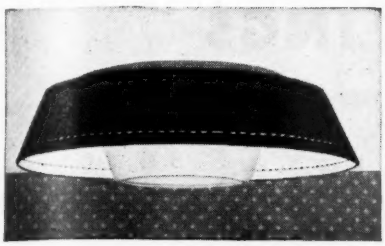

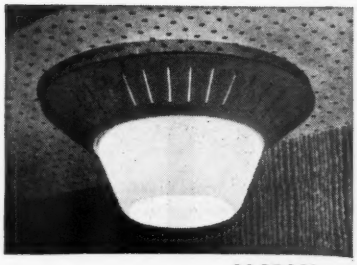

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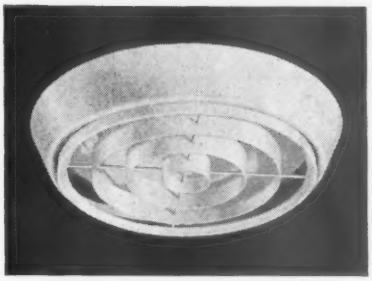

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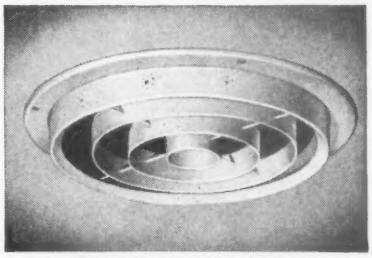

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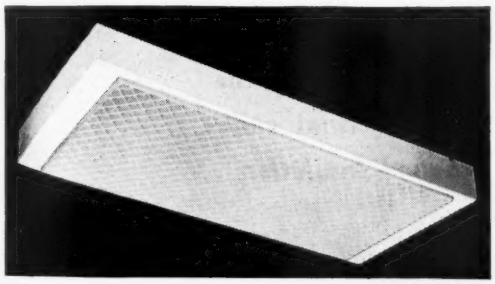

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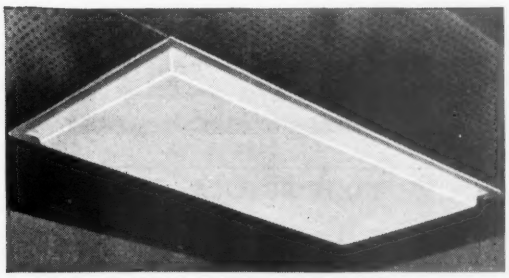

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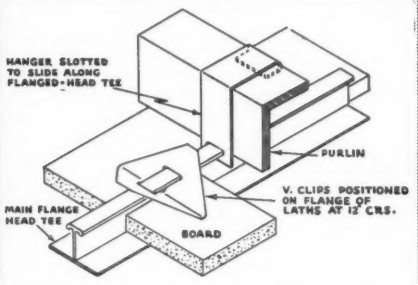
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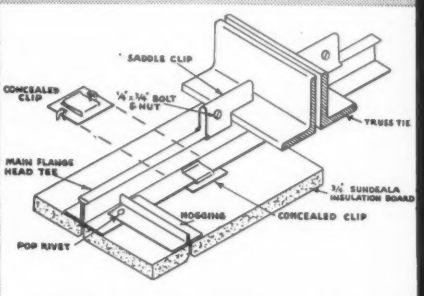

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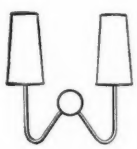

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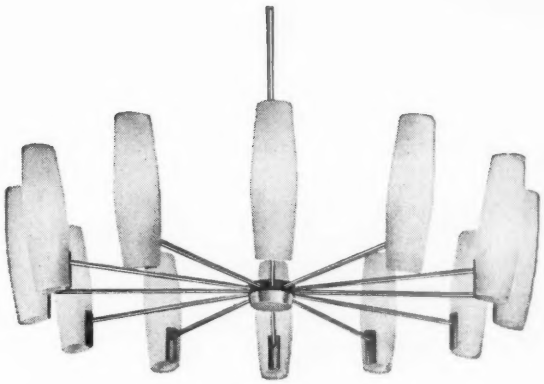

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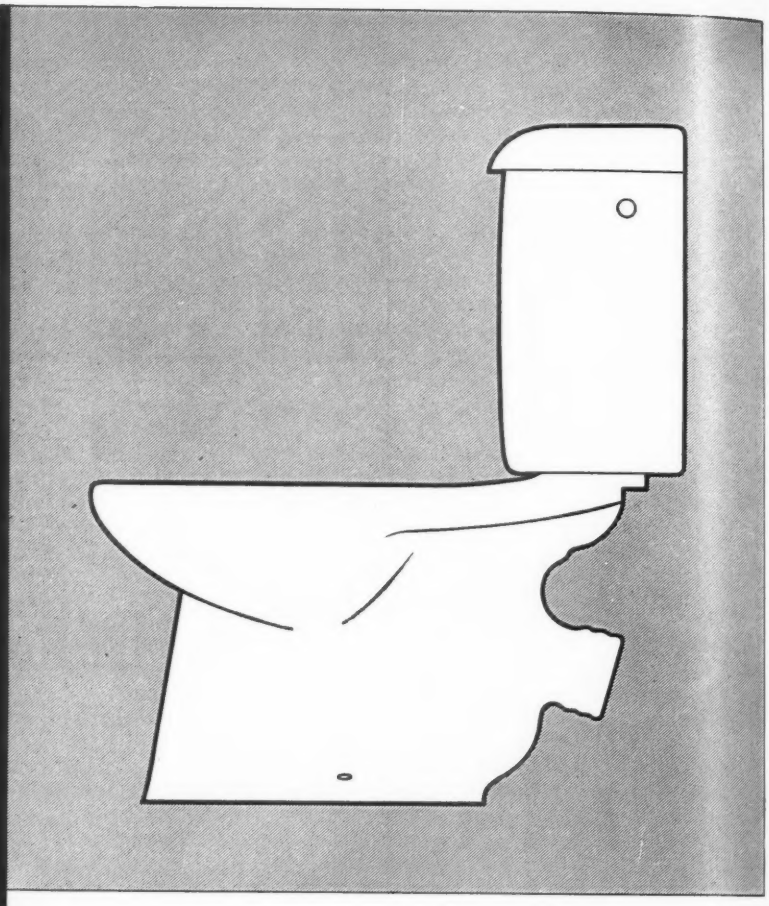

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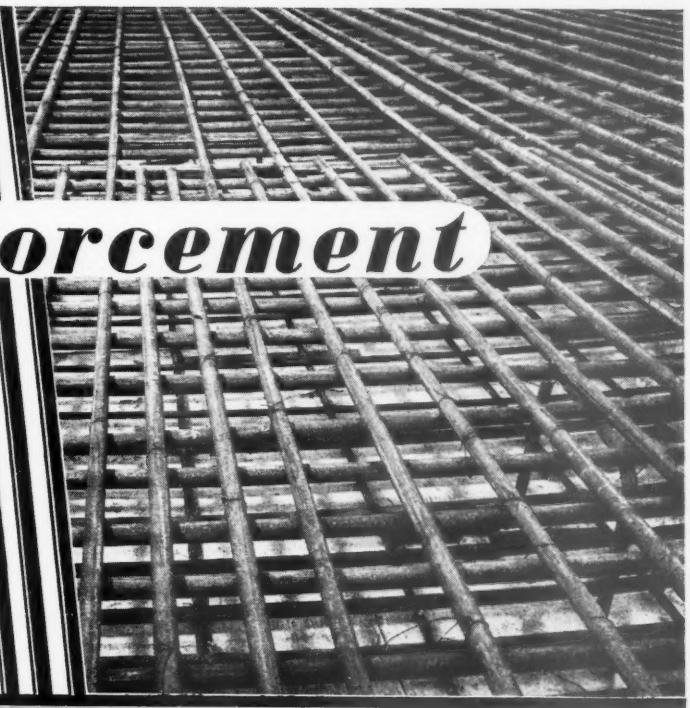

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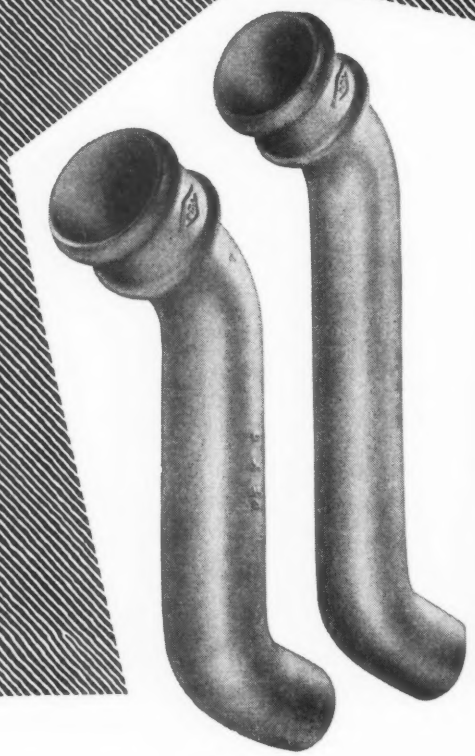

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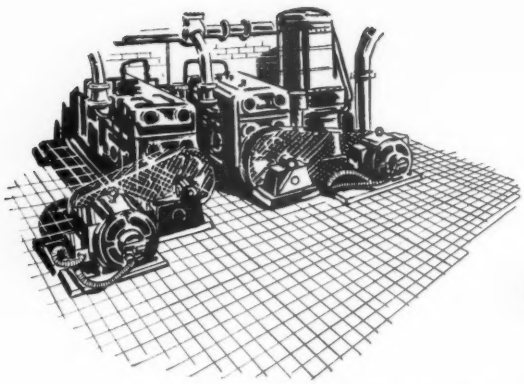

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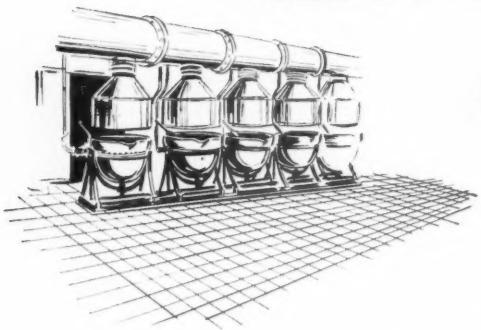

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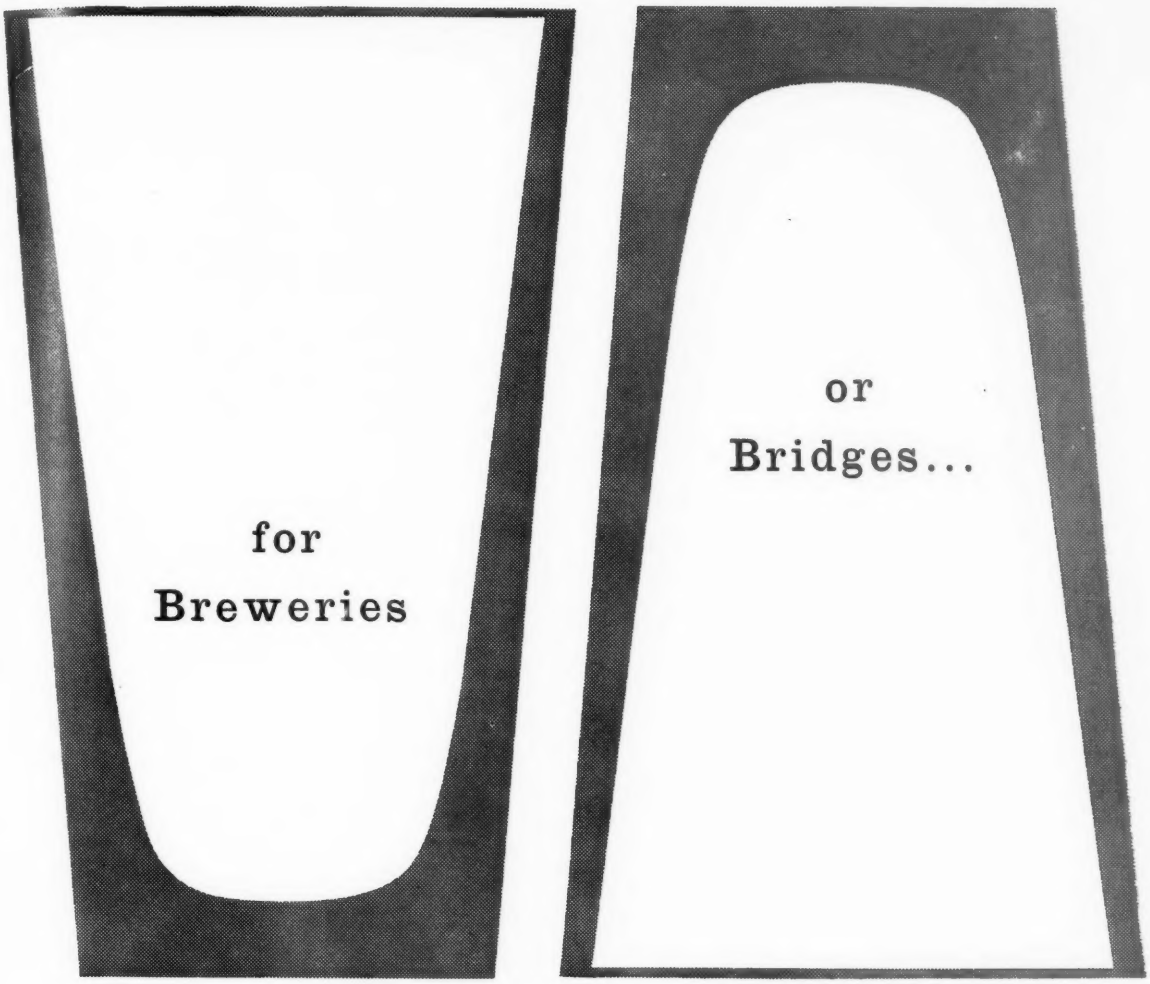

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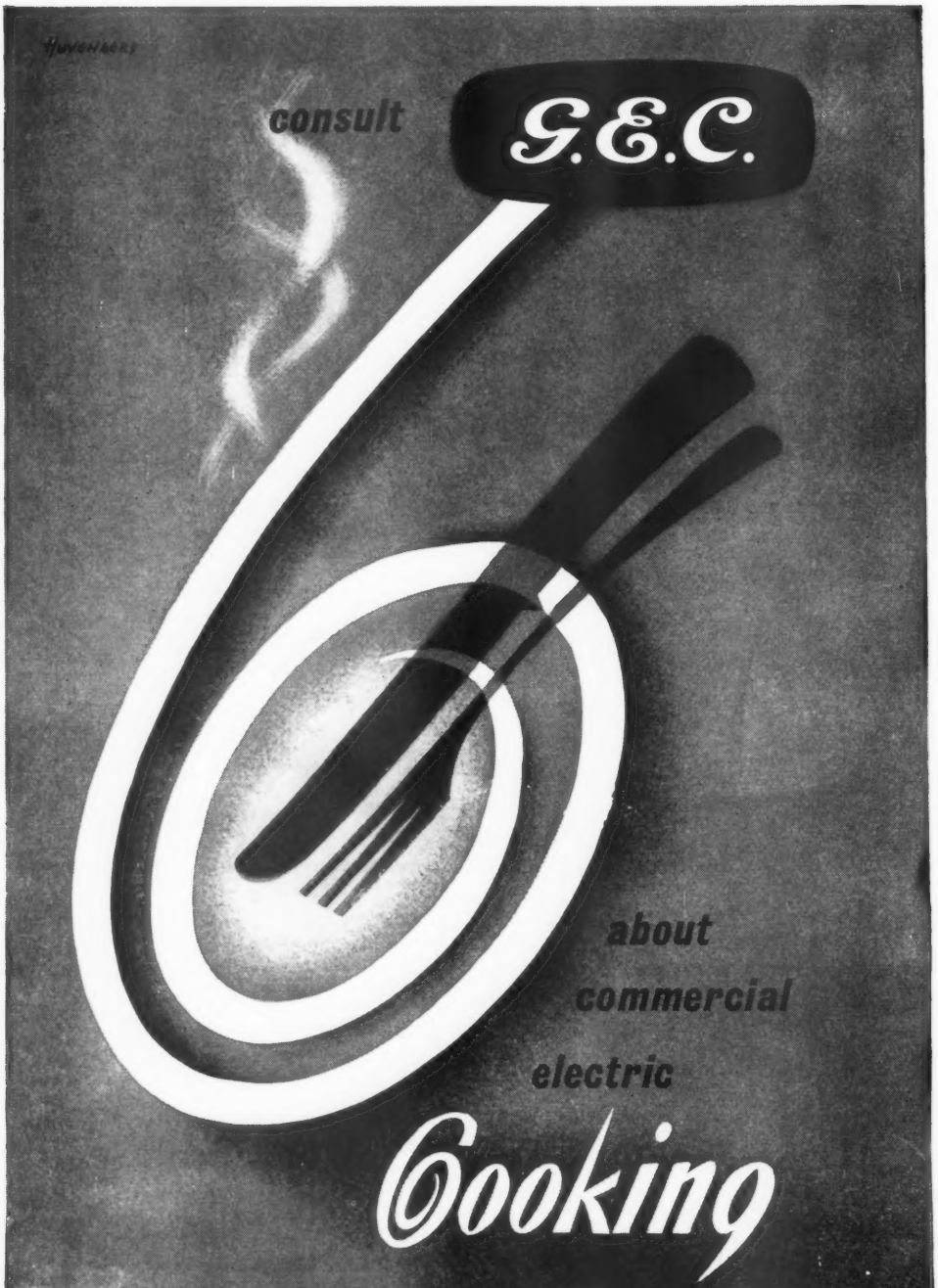

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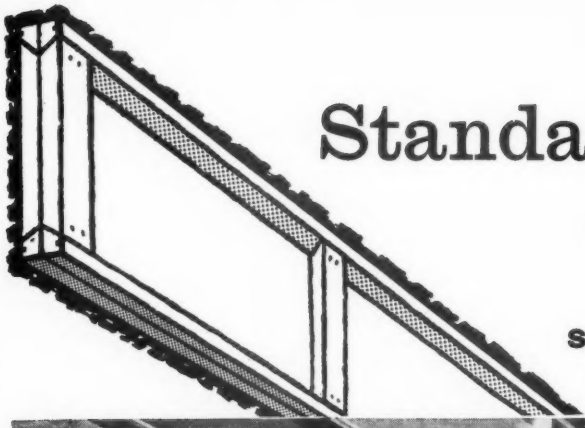

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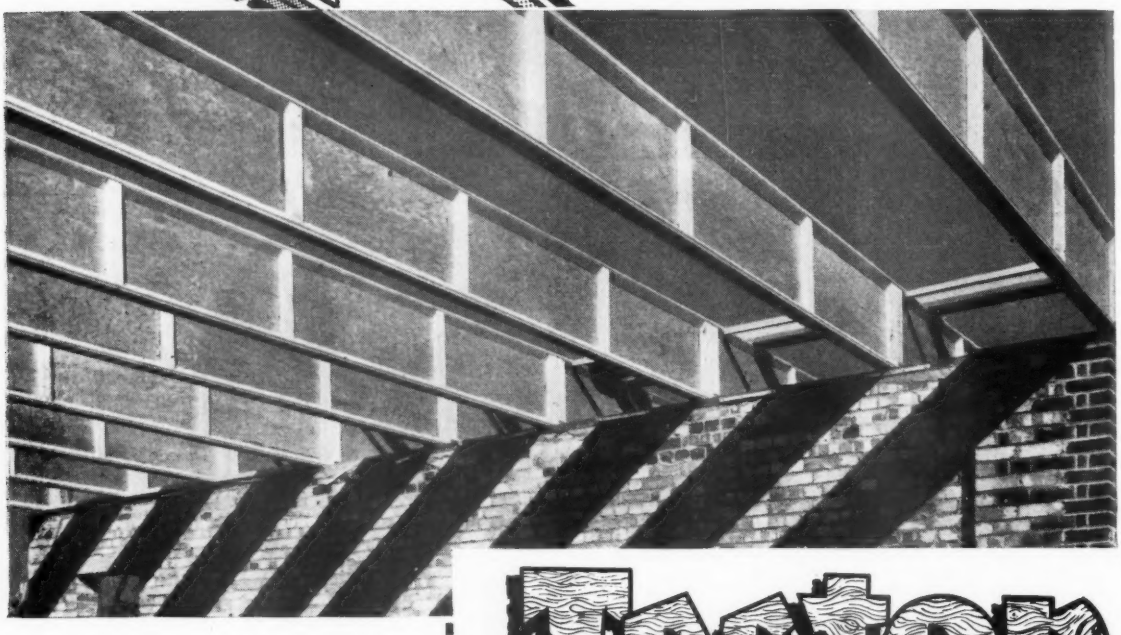

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JANUARY 1960 THIRD SERIES VOL. 67 NUMBER 3 THREE SHILLINGS AND SIXPENCE

EDITORIAL

The Civic Trust Amenity Awards

The Civic Trust in announcing the results of their County Amenity Awards Scheme, 1959, express their thanks to the President, R.I.B.A., who nominated the Assessors on the basis of one per county, and also to the County Planning Officers for publicising the scheme.

'There is little doubt', says the report, 'that many more professional people who would have wished to enter did not know of the competition. In some counties no entries at all were received, though in others . . . the number was between 30 and 40'. It is admitted that it might have been clearer to competitors if the title had been 'Civic Design Award', rather than 'Amenity Award'. It is not the intention of the Trust to enter the same field as the R.I.B.A. Architecture Bronze Medals, rather they wish to stimulate interest in the appearance of the town, village or street as a whole.

However, the result is considered encouraging particularly as among the architectural awards were three petrol filling stations, public lavatories, bus shelters, information kiosks, and other small structures.

This year's competition will be open to County Boroughs and their equivalents throughout the U.K., and in 1961 the scheme will be open to London Boroughs.

Architect and Engineer: Engineer and Architect

The JOURNAL wishes to apologise for the extraordinary long delay in printing the report of the joint meeting with the Civils which was held at the Institution of Civil Engineers nearly a year ago.

Arrangements and timetable for joint simultaneous publication of the report rested with the Civils, who fixed it for June 1959. It turned out that the material was not quite ready for the June JOURNAL. The printing dispute then intervened and when publication was resumed in August the space for this very long report could not be found until this month. The written contributions are being held over until February.

Members are reminded that the next joint meeting between the Royal Institute and the Institution will be on 15 March to discuss 'The Impact of Motorways upon Cities', when we shall be the hosts.

Association of Official Architects

The Association, which was formed in June 1959, has now produced its own News Sheet for circulation to members. It should also be of assistance in recruiting new members as it gives the background and objects of the Association in an attractively printed form. One of the items in the News Sheet informs us that the Executive Committee is keeping a close watch on Professional appointments in the Press, and where they advertise for 'architectural assistants' for positions which really require architects, the appointing authorities have this pointed out to them.

A meeting of the Council of the Association of Official Architects will be held at the R.I.B.A. on 29 January.

The Twelfth Milan Triennial

The Milan Triennial is to be held from July to November, 1960 and will hinge on the home and the school. The Italian Ministry of Education, which is anxious to engage in its own programme of modern schools, has collaborated with the organisers of the Triennial, a corporation established by Italian law, acting on behalf of the Milan Municipal Council, the Italian Ministers of Foreign Affairs, Public Education, Public Works, Industry and Trade, Labour and Welfare, The National Council of Architects and the Lombardy Institute of Science and Letters.

H.M.G. has been much impressed by the volume of informed opinion which has called for a British exhibit at the Triennial, and has accepted the corporation's invitation to submit an exhibit dealing specifically with British school building.

Sir David Eccles, Minister of Education, has invited Nottinghamshire County Council to design the British exhibit which will take the form of a three-class primary school using the system of construction developed by Nottinghamshire and which has been adopted by a consortium of other local education authorities for a 'pooled' programme of about 50 projects a year, most of them schools. The Nottinghamshire Authority have agreed to make their architectural and educational services available for the exhibit, which would be fully furnished, without charge.

In addition to the main home and schools exhibition at the Triennial there will be a retrospective exhibition of the work of the late Frank Lloyd Wright.

Council Business

The Council met on 8 December, with the President, Mr. Basil Spence, in the chair. The following are some of the points from the Secretary's Report to the Council.

Secretary's Report

Milan Triennale 1960. The announcement made by Sir David Eccles that Britain's achievements in school building are, after all, to be shown at the *Milan Triennale* next year is greatly welcomed. The President and other members have played a considerable part in helping to persuade the Minister of Education of the importance of participating in this event.

President's Inaugural Address. In his Inaugural Address on 3 November, the President suggested a possible 'Higher Council' representative of all those professions concerned with land use. An informal lunch party to be attended by the Presidents and Secretaries of the Civils, Structurals, R.I.C.S., T.P.I., and Landscape Architects, to discuss this, has been arranged for 12 January.

University Grants Committee. The Honorary Officers of the Board of Architectural Education, with Mr. Haynes, saw representatives of the University Grants Committee on 13 November.

The representatives of the U.G.C. were Sir Keith Murray (Chairman), Mr. E. R. Copleston (Deputy Secretary), and Mr. Stanley Meyrick (Chief Architect). Mr. Brook, of the Ministry of Education, and Mr. Robertson, of the Scottish Education Department, were also present.

Sir Leslie Martin explained the views of the Committee on the Oxford Architectural Education Conference on the question of Schools of Architecture in Universities. The particular cases of Nottingham and Bristol were mentioned, and their importance stressed.

The U.G.C. representatives said that the case put by the R.I.B.A. representatives would be given the most careful consideration in connection with the forward planning on which they were engaged.

Competition by Tendering. On 10 November 1959, an *ad hoc* meeting was held at the R.I.B.A. to consider the increasing practice among some Authorities of offering valuable sites to competing financial developers, and accepting in virtually all cases the highest bid whether the accompanying architecture was good, bad or indifferent. It was felt that this practice was putting good architecture in jeopardy.

There are also other objections to the system, which even the developers themselves do not like. Frequently there is no detailed schedule of accommodation provided and hence no common ground between the bidders. Influence can be, and frequently is, brought to bear in favour of particular schemes; and the system works to the disadvantage of provincial architects as financial developers usually operate in London or one or two major cities.

The problem is therefore to find some other way for local authorities to sell their valuable sites, preferably one in which expert guidance from a financial developer could be made available, particularly to small authorities.

One possible solution under consideration is the holding of competitions limited to architects jointly with their respective developers; with an independent financial developer among the assessors.

The meeting was attended by Messrs. R. G. Covell [*F*], C. H. Elsom [*F*], J. H. Forshaw, C.B. [*F*], F. Gollins [*A*], S. Greenwood [*A*], W. F. Howard [*F*] and A. E. T. Matthews [*A*]. At a further meeting on 6 January, it is hoped that they will be joined by Mr. Hubert Bennett [*Honorary Treasurer*] and the L.C.C. Valuer, when the idea of a limited competition will receive further consideration as to its possible effect upon the Architect and R.I.B.A. Codes; and to see how far such a scheme could be adequately controlled through new clauses in the R.I.B.A. Competitions Regulations, etc.

Royal Commission on Local Government in Greater London. The Council will recall that in July 1958, a Memorandum of evidence was approved for submission on behalf of the R.I.B.A. to the Royal Commission on Local Government in Greater London. The Royal Commission recently asked that R.I.B.A. representatives should appear before them to amplify the written evidence by an oral statement and answer questions on the Memorandum. This was undertaken by Mr. Arthur Ling [*F*] and Mr. P. E. A. Johnson-Marshall [*A*] on 18 November.

Technical Information Committee: Meetings 1960/61. The Symposium on the Design of High Buildings, which was to have been sponsored jointly by the R.I.B.A. and the Yerbury Foundation, has had to be postponed until the beginning of the next Session, because financial arrangements cannot be completed in time. To replace it, a Hospital Conference, from 23 to 27 May 1960, is being arranged, with the assistance of the Ministry of Health, the Nuffield Foundation, the King Edward Trust, and the Regional Hospital Boards. It is intended that it should form an introduction for architects who have not previously designed hospitals but who may well be doing so over the next few years in view of the extensive programme that is planned.

Quarterly Inquiry into New Work for which Private Architects have been appointed. The first results of this inquiry were published in the October issue of the JOURNAL, and reprints were circulated to a number of Government Departments and research organisations concerned with the forecasting of future trends in the economy. Appreciative comments have been received from the Treasury, Central Statistical Office, Board of Trade, National Institute of Economic and Social Research, and the Department of Applied Economics at Cambridge, all of whom have asked to receive copies of future results. The Ministry of Works National Consultative Council of the Building and Civil Engineering Industries will be discussing the survey at their next meeting in this month.

The results for the third quarter of 1959 show a considerable improvement in the level of new commissions reaching private architects compared with the same period of 1958. New commissions for private housing were more than doubled, and those for industrial building also showed a marked improvement. Commissions for offices and banks have been running at a low level throughout the year, but those for other commercial buildings show signs of an increase. More work was also reaching private architects from the public authorities. Views were expressed that the scope of the enquiry might be increased to cover local government work. The matter is being looked into.

House of Commons Debate—Industrial Development and Preservation of the Countryside. Mr. W. F. Deedes, M.P. for Ashford, Kent, moved the following motion in the House of Commons on Friday 20 November:

'That this House, bearing in mind the heavy and continued demands being made upon the countryside by new industry, by motor roads, by power stations and power lines, by reservoirs and by the spread of new housing; and recognizing that such development is essential and likely to continue at a rapid rate for some years, urges Her Majesty's Government to make a fresh appraisal of forthcoming demands and to stimulate by every suitable means through industry, planning authorities, professional bodies and voluntary institutions, higher standards of siting and design within the English landscape.'

The R.I.B.A., having prior knowledge of the motion, were able to interest several Members of the House, and a lively discussion took place. The general tenor of the debate, on both sides of the House, was in favour of some kind of planning control and of the greater use of architects (though landscape architects received most frequent mention), in order to improve the 'quality of living'.

In replying on behalf of the Ministry of Housing and Local Government, Sir Keith Joseph drew attention to the fact that his Minister had opened the R.I.B.A. Symposium on 'Design Pays', and now had it in mind to ask the R.I.B.A. how best he could follow up this theme. The Minister was also considering ways in which to bring the importance of good design to the notice of private house builders, particularly the small ones, since the larger ones often satisfied admirably the aesthetic requirements of landscape.

We have since followed up Sir Keith Joseph's remarks by inviting the Minister and Sir Keith to a small lunch party at the R.I.B.A. early in the New Year, for an informal discussion. They have readily agreed, and a suitable date is now being sought.

Other matters following the Secretary's Report included among them:

The Hong Kong Society of Architects, which was formed in 1956 has been admitted as an Allied Society. Of the 62 members of the R.I.B.A. resident in Hong Kong all but eleven are already members of the Society and these have been urged to join.

Liaison Overseas. The Council having approved the necessary expenditure, the President, R.I.B.A., has accepted the invitation from the University of Manitoba to attend the Annual Assembly of the Royal Architectural Institute of Canada and the celebration of the opening of the University's new School of Architecture, between 30 May and 4 June.

C. D. Spragg Fund. The Fund opened for members to contribute to a testimonial to the retiring Secretary has now been closed.

From a total sum of over £2,000 subscribed, watches were presented to Mr. Spragg and to his sister, Mrs. Fidler, and a memorial book of the names of subscribers, together with cheques for the balance of the fund, were presented to Mr. Spragg. A meeting for the purpose of this presentation was held at the R.I.B.A. on 7 July.

A.B.S. Finances. The President suggested to the Council that there should be a voluntary subscription of 5*s.* per member (2*s.* 6*d.* for students) to the funds of the Architects' Benevolent Society. The matter is being considered by the Finance Committee who will report back to the Council. On making this suggestion the President drew attention to the many distressing cases which were brought to the notice of the A.B.S. and the very small allowances which the A.B.S. were able to make at present to the applicants.

Other notes from the Minutes of the Council appear on page 102.

Michael Ventris Memorial Fund Award

This fund was founded in memory of the late Michael Ventris [*A*] by his friends in appreciation of his work in the fields of Mycenaean civilisation and of architecture. Each field is the subject of the award in alternate years. The award for 1960, value £100, will be made to an architect or student of architecture, and application should be made to the Secretary, The Architectural Association, by 1 February. The conditions are given in full on page 103.

A.B.S. 10th Annual Ball

The hardworking A.B.S. Ball Committee under the leadership of Mr. C. J. Epril [*F*] are to be congratulated on the 1959 Ball, held at Grosvenor House on 9 December, and attended by over 1,200 people.

The theme, 'Victoriana', inspired amusing décor by the students of the A.A., Bartlett, Hammersmith, Northern and Polytechnic Schools, and the Menu was great fun.

In addition to the usual attractions and side shows, a selection of the better entries for the new A.B.S. symbol competition was mounted (the result is given on page 108), and there was the last-minute rush to guess the number of nails in the dustbin. Estimates varied between 750 and 36 million! The actual number was reliably counted as 45,289, and the nearest guess was 45,298 by Mr. W. V. Morgan who will be offered the first prize of an Enterprise sailing dinghy worth £150 donated by Mr. Howard Lobb, C.B.E. [*F*].

R.I.B.A. Diary

TUESDAY 5 JANUARY. General Meeting. Announcement of Award of Prizes and Studentships. *Design Problems of Space Travel* by Dr. Tom Margerison, B.Sc., Ph.D.

WEDNESDAY 27 JANUARY. *Practical Fire Protection.* One day course of lectures for architects in conjunction with the Fire Protection Association.

TUESDAY 2 FEBRUARY, 6 p.m. General Meeting. Address to Students and presentation of Prizes and Medals 1960 by the President, Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A. Criticism by Mr. Philip Powell, A.A.Dipl. [*F*], of work submitted for Prizes and Studentships.

MONDAY 18 JANUARY 1960, 6 p.m. Library Group. Mr. Robert W. Pite [*F*] will introduce an evening on Professor Beresford Pite (1861–1934).

TUESDAY 19 JANUARY, 7 to 8.30 p.m. Meeting of the Architect's Christian Union in the Henry Jarvis Hall. The guest speaker is The Rt. Rev. Cuthbert Bardsley, Bishop of Coventry, and the President, Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A., will be in the chair. (Buffet from 6.30 p.m.)

Architect and Engineer

by E. D. Jefferiss Mathews, O.B.E. [*F*]

Engineer and Architect

by Ove Arup, C.B.E., M.Sc., M.I.C.E.

Papers discussed at a Joint Meeting of the R.I.B.A. and the Institution of Civil Engineers held at the Institution on 20 January 1959, Mr. Basil Spence, President, R.I.B.A., in the Chair

E. D. JEFFERISS MATHEWS

IT is worth while at the outset of this subject to try to find out the reasons why it is necessary to consider it as a problem. Disregarding the more primitive forms of building from the early days of man and considering only the more complex and larger structures from, say, the Egyptian Dynasties onwards, one sees a mass of building which shows fine engineering solutions as well as practical and aesthetic architectural design. Yet only after all these years does the architect-engineer relation come under serious discussion. To shorten the background one needs to look only as far as the many large structures—both those which are mainly architectural in character and those in which engineering predominates—to see in the past century the successful functional and aesthetic accomplishment of structural design without any conscious collaboration between architect and engineer.

There seems to be no doubt that each of the successful structures of the past has been the work of one master brain, sometimes architect, sometimes engineer, according to the predominant nature of the structure. Ideally the interpretation into actuality of any requirement of a structure seems best left in the hands of a single person. There are nearly always two or more solutions to the problem and the selection of one by a single person closely connected with all the aspects of the requirements has more chance of success than an attempt to design by what might be called 'the committee method'. This is confirmed when it is realised that those buildings and structures are, by modern standards, comparatively simple in their use and manipulation of materials and structural methods—masonry, timber, brickwork, and iron. In general only one or other of these materials was used in the structural form and expressed itself aesthetically in that form. And within these structures the electrical and mechanical services, as known today, had little or no effect on the design. Now, the introduction of new materials and the structural methods which have developed with them, have turned not only big structures into more complex forms, but also even the smallest are affected by the complexities, choice of materials, and methods of structure, to say nothing of the requirements of services affecting the design. So, although few would dispute the ideal of a single-mind creator of any structural design, it is now apparent that the complexities have exceeded the capacity of the average, or even the above-average single mind, so that, in the absence of genius it is necessary to find the best way of combining two or more minds, each of which is able to grasp one entity of the problem, and it can be hoped that this combination will be successful, if not actually in equalling the ideal of the single mind, then at least in achieving a unification which will lead as nearly as possible to a comparable result.

Since this state of affairs has been forced upon designers by the inevitable and proper development of science, they have in recent years rubbed along with a loose form of collaboration, sometimes successful, sometimes not. This period of loose collaboration has been developing for perhaps a quarter of a century or more and so there has been time to find out the weaknesses of this state of affairs. Now improvements must be sought. Since there is general acceptance of the ideal of the single master mind, the problems must not be limited to evolving only a method of satisfactory working between experts, but to find ways and means to achieve something near the advantages of the single-minded solution. This, as the author sees it, is the reason for the initiation by both the Institution and the Royal Institute of the study of this problem and he hopes that from these Papers and the discussion which they should evoke, will develop the continuation and further study of the problems between the two professions.

Human collaboration of any kind is seldom achieved without some sacrifice of individuality by those collaborating, and it is also probably true to say that the successful collaboration represents an equality of compromise. This requires unselfishness and understanding of each other's particular spheres. On the face of it the architect and the engineer, both trained to solve similar problems, and for that very reason both trained to develop a high degree of individual expression, are not the ideal pair to form the kind of unified collaboration which must be the solution. They are too close to each other; it would be easier if their respective spheres were further apart. If right in this assumption then the author thinks that the first stage of the solution lies in education. To generalise, the fact has to be faced that up to now the technical educations of the architect and engineer have been poles apart, although aimed at a similar basic achievement. If those technical educations could combine, there would be more chance of a sympathetic understanding of each when, in maturity, engineer and architect are together asked to solve a problem. The author therefore makes technical education his first point; it is the foundation of what these two Papers are advocating—a relation between architect and engineer from the very start of their training. It will be long-term in development, but if it is believed that collaboration is necessary now and in the future, then no time should be lost in considering ways and means of some form of technical co-education.

At this juncture one viewpoint should be made clear in order to avoid an obvious possible misunderstanding. There is one fundamental difference in the approach to a design problem which constitutes the basic difference between architect and engineer. The architect creates the structural problem. The engineer is required to solve an already-stated problem; that problem may be the structural requirements of a building or the bridging of a river. This difference will always attract a different mind. The author's suggestion for unifying education is not to try to roll these back into a single mind, which he believes now to be impossible, but to reach a form of education which will give each a sympathetic understanding and some knowledge of the other.

Now turning to the present state of affairs, the author suggests that it is largely a 'hit and miss' arrangement. For the most part architect and engineer are drawn together by chance, sometimes the architect selects the engineer, sometimes the engineer selects the architect, and sometimes they find themselves joined together by the client without having previously known each other. Any one of these circumstances can lead to successful collaboration but there are sometimes failures. It seems that whatever the arrangements, it is still a matter of personalities. No rules or agreements will make any difference. It is in fact, like marriage. It doesn't matter whether or not there is any kind of written agreement between the parties, if their personalities clash the partnership is unsuccessful. If they are compatible, one may subordinate his individuality to the other, or when both partners are willing to give and take in equal measure there is every chance of

success. Probably, on the law of averages, this is as good an arrangement as can be expected. However, this uncertain state of affairs cannot be allowed to remain without studying the possibilities of improvement. One obvious possibility is whether or not it is right for architect and engineer to combine in a single firm. This has been done successfully but it is obvious that there are disadvantages and it is not surprising that at the moment there are few examples of this arrangement in the United Kingdom although in America it is comparatively common. The question posed is whether it is possible for two people of equal standing to find sufficient work to exercise with comparative equality the creative ability of both. There is another more revolutionary form of possible collaboration which cannot be overlooked today although many may not like it. This is the combined architect-engineer-contractor service—the 'package service' as it is termed. Possible future trends make it unwise to ignore this development.

It is now time to consider another problem—that of the electrical and mechanical engineer. It is comparatively easy to arrive at a satisfactory working collaboration between architect and structural engineer; the affinities are already fairly close and the problems not dissimilar. But the requirements of the electrical and mechanical engineer now affect designs as much as the structural aspects. Architects may well ask the engineers if they have always to accept the structural engineer and the electrical and mechanical engineer as separate persons, or is it possible, looking ahead, for one man to be both a structural and an electrical and mechanical engineer? The author doubts if this is possible, and for the moment he assumes that it is not. Therefore the collaboration which it is sought to achieve for the success of a design, is not merely that between two people, but is in fact a trinity—architect-structural engineer-electrical and mechanical engineer.

The next problem to consider is the one which arises when structures are predominantly in the field of the engineer. The obvious examples are bridges. If architects disregard this, or attempt leadership where it is not wise that they should lead, the nation will lose the advantage of the proper use of the architect's training and his contribution to what are predominantly engineering structures.

The foregoing is a summary of the problems. Apart from his suggestion for some form of co-education the author fears that he has not been constructive. Within the scope of this Paper it is impossible to put forward even his own personal views towards improvement. He hopes that the two Papers will stimulate discussion which can lead towards improvement of the present situation.

Improvement is vital, not only on the purely aesthetic side but also on the economic side. Failure of architect and engineer to understand each other's requirements must lead to uneconomic design; difficult forms of construction and high cost of building will inevitably follow. Bad architecture and higher cost of building will cause the public to accuse the designers of failing in their responsibilities. These responsibilities are not confined to the larger projects—today they exist in even the smallest house. The architect has to make a selection, for example, of the heating method of that house and his selection can substantially affect his design. It is doubtful whether he can have such intimate and detailed knowledge of the many possible forms of heating from which he can make his selection; even in such a small project the author considers that he should seek the services of the engineer. There can be no doubt that the complexities of structure, of electricity, and of mechanics in any modern building are beyond the scope of the single mind, and the need for collaboration, which was stressed at the beginning of this Paper, becomes more and more apparent if the successful aesthetic, architectural, and economic solution is to be achieved.

If architects and engineers can get to know each other better, that will be something towards the improvement which is so desirable. At the moment the two professions are far too aloof. The fact that this joint discussion of the two professional societies involved is the first of its kind is sufficient to indicate that architects and engineers have not made the best of the present situation. The author hopes that more meetings of this kind will be held and they alone should go a long way towards achieving something of the collaboration for which these Papers are pressing.

OVE ARUP

THE work of architects and engineers has much in common; in fact it can be said that it is essentially the same kind of work —to prepare drawings and specifications to enable other people to erect certain structures or buildings and to supervise their erection. When it has been decided to build something—whatever it is—they are the people who are called in to do the thinking about what the job should look like and how it should be built, and their labours finally result in *the design* for the job. By 'the design' is meant (in this Paper) all the instructions in the form of drawings or other documents necessary to enable a skilled contractor to erect the structure.

To create such a design is a highly skilled job. It involves satisfying and reconciling the often conflicting claims of function, stability, appearance, practicability, and economy; and thus giving the client the best possible value for his money. To do this, the designer must possess certain technical and other general knowledge and experience; drawing on this knowledge, and understanding the specific circumstances and requirements of the job, he must set his imagination and intuitive processes to work so that he more or less simultaneously can consider its various aspects and arrive at the right compromise solution.

The difficulty which faces designers nowadays is that the knowledge required to design a modern building or structure is far too extensive to be mastered by one mind. This is so because of the enormous technical progress which has taken place in the past 100 years, and because, as a result, the design has become much more important, besides being much more complicated. Old-fashioned building relied on tradition for its guide. In contrast, modern technique is distinguished by the fact that every step taken towards the goal is carefully planned beforehand, and the design is the key to all this planning. It has been proved again and again that it is cheaper to think and plan before building than to build by trial and error. Therefore the design cannot be created without intimate knowledge not only of the exact functional requirements—which again depend on technical possibilities—but also of all the modern structural techniques and labour-saving devices, including production engineering. In addition, of course, everything which is built, whether a building or engineering structure, poses aesthetic problems.

The answer to all these problems, as usual, can only be found by the collaboration of specialists. There is, however, a great danger in this. 'Design by committee' is not practicable. The process of weighing the pros and cons of the innumerable major and minor possibilities cannot be put down on paper or argued out between a number of designers with different technical education: there would be no end to it. It must be largely intuitive, and that means it must take place in one brain with access to all the necessary expert knowledge and advice as required and with authority to make the final decision. It has always been true (and the author thinks it will always be true) that really outstanding work bears the imprint of a strong personality who has exercised control over the evolution of the design.

For a time this difficulty could be overcome by having two different kinds of designers—architects and civil engineers—with a different basic training, and dividing the work between them accordingly. Architects would take over the jobs where

functional requirements were mainly a matter of spatial arrangement, and where the aesthetic aspect was of major importance. And the engineers would deal with jobs where the functional requirements were easily stated, as in the case of a bridge, dam, pier, or water-tower, but where structural and economic problems dominated.

Nowadays, such a complete division of all building activity into two distinct spheres is simply not feasible. In the architectural sphere practically every job needs, at the design stage, the knowledge not only of structural engineers but of electrical, heating, acoustical and other specialists, as well as of the contractor's methods of building. In the engineering sphere, the need for architectural advice is recognised more and more. Collaboration is therefore necessary. It is a question then of creating the conditions in which this collaboration will give the best results.

Unfortunately the infinite variations in types of jobs, architects, and engineers make it impossible to generalise. But it would seem desirable to adhere to the principle of undisputed leadership. The leader should, in most cases be either an architect or an engineer, because only a technician is qualified to be in charge of a design. Only a technician can really appreciate the viewpoint and arguments of other technicians, whereas a layman often cannot, and that is why it can be very unfortunate if a layman meddles too much with the details of a design, as clients have been known to do.

It is desirable, therefore, to retain the two spheres of building, one where architects are in charge, and one where engineers are in charge, in each case assisted by members of the other profession. Which jobs should go to which profession can of course be a matter of dispute, and some miscasting undoubtedly takes place. Actually it does not matter so much whether in borderline cases an architect or an engineer is in charge. What matters is, that the leader should appreciate his own shortcomings. If an engineer is in charge of a mining camp or a factory, and if he is not himself capable of doing justice to the architectural aspects of the job, then he should insist that the client should appoint a consulting architect—or he himself should obtain the necessary architectural advice. If an architect is in charge, he should likewise make sure of his technical assistance on matters of production technique or structural design before proceeding with the design.

It is, unfortunately, not given to everybody to know his own shortcomings. But to get the best possible results is largely a question of leaving the decisions to those best qualified to make them. And a very necessary part of leadership nowadays is an ability to understand and appreciate the point of view of others, to be able to judge quality also in the allied technical fields so as to extract the best from all collaborators: in short, to be a tactful, understanding and forceful chairman.

An architect in charge of a large and complicated job must make the final decisions on hundreds of different questions and deal with hundreds of people in the process. There are first his own staff—he should be able to guide them easily enough, because he understands all that they are doing—they are, so to speak, extensions of himself. Of course, sometimes in a large organization it may be a member of the staff who is really the architect—but that is a different matter, and one must here consider the firm as a unit and leave them to sort out their own organization.

Then he has to deal with the many suppliers of materials and other sources of facts about local conditions, available resources, and materials—everything which has a bearing on the design. Here he is in the position of buyer or customer. While he can count on a ready response he must be able to distinguish between facts and propaganda.

His relation to his technical advisers—for instance, his structural engineer—is rather different. He cannot guide them in the same way as he guides his own staff. He is dealing with a different independent profession; he is asking for their advice; and he is bound to accept it—if he does not change his adviser, which is very difficult. If the engineer points out that a proposal conflicts with the law of gravity there is not much the architect can do about it. On the other hand he should not always take no for an answer—a structural difficulty need not be a structural impossibility.

The main difficulty about this relation is really that the architect should have his technical advice even before he starts sketching out his first conception of the job. When he starts designing in his head, letting his mind wander over the various possible solutions, rejecting them one by one until an idea is deemed worthy of further investigation, then the possible structural arrangement must be an essential factor—or can be, because there are of course hundreds of different kinds of jobs into which structural considerations hardly enter. But if they do, then the architect should really be an engineer as well—and a good one, too. (This happens, of course, but this is not the right juncture to consider these few ideal exceptions.) If he is not, he should have the engineer at his elbow as soon as he starts sketching. That, however, is rarely feasible. As a rule, the engineer is not even appointed then—which is wrong, of course. As a result it is often the architect who makes all the main structural dispositions, and the engineer is left the task of calculating the sizes of beams, columns, etc. Many architects, and still more clients, assume that to be the job of the structural engineer: even some structural engineers would accept this. But that is a degradation of the role of the structural engineer.

Where structure is a major consideration, the engineer should be a partner in evolving the design, so that the proper integration of structure and architecture can be achieved. It is of course his job to assist the architect to realise his architectural conception, and he must accept his role as an assistant. But he should be a useful assistant, and that means that he must understand and sympathise with the aims of the architect, so that he, in his own intuitive thinking, can arrive at proposals which will further the architect's wishes—just as a pianist in his own right should not deem it beneath his dignity to act as an accompanist, as long as he is not asked to play with one finger.

The conclusion is, then, that the architect should be part engineer and the engineer should be part architect in order to achieve a fruitful collaboration. The architect should have an understanding of the basic structural principles—which can almost be boiled down to a thorough understanding of the force triangle. And the engineer should have a feeling for form and proportion. The best way for both to achieve this is through actual collaboration. The fact that a young man straight from college still has a lot to learn must be accepted. The engineer receives the best architectural education from the architects he is working with—or some of them—and the architect, through the same collaboration, gets to know what a structure can or cannot do. When two persons or firms have worked together for a long time a mutual understanding develops which makes collaboration easy and fruitful. Perhaps a foundation for such collaboration could be laid already at school. The author believes firmly that civil engineers should learn more solid geometry, freehand sketching, and appreciation of architecture—if that is possible.

It would be tempting to try to describe at some length the various patterns of architect-engineer relation which occur in practice, but there is space for only a few remarks.

There are the great many cases where the architect does not really care very much, and where the job—or at any rate the solution—is of a routine nature. The relation is a business matter, efficiency in delivering the goods is what counts most, and there is really no problem to discuss. It is when the architect or engineer or both really make an effort to think afresh, to find an original solution, that there may be a difference of opinion.

Architecture, being a particular kind of art, suffers from, or glories in, being subject to fashion, changing taste, theories, ideologies, or personal idiosyncrasies, and it can be difficult for the engineer to follow suit. Some architects believe in a sculptural, classical, or formalistic approach to architecture; for them the structure has to do exactly what they want it to do, they are after certain spatial and visual effects, and the engineer must somehow contrive to make them possible, whether it is natural and sensible from a structural point of view or not. This attitude may be perfectly justified—it depends so much on the nature of the job and on how well it is done. But if the engineer is asked to do violence to the structure for no very good reason that he can discover (in other words if he does not see eye to eye with the architect), then the collaboration is not a happy one.

There is another school of architects who consider that architecture should grow out

of the structure, and who are anxious to give the engineer a completely free hand. Again, depending on the type of job, it may work or it may not, because it may simply mean that the architect does not in fact exercise architectural control, which is bad.

Of course, the variations are endless. There may be engineers who are much better architects than the architects they are working with. And there are architects who have a much more imaginative grasp of structural possibilities and who have the greatest difficulty in getting their pedestrian engineering colleagues to go along with them. It is a fact that some of the most daring conceptions in shell-design have originated with architects—but they tend in some cases to be somewhat extravagant and not based on very sound structural reasoning. It often becomes the sad duty of engineers to restrain the enthusiasm of architects for new structural forms.

Where the structural problems are dominant, there should as a rule be an engineer in charge and he should preferably be an Eduardo Torroja, who is a great architect as well as a great engineer. Failing that—and this appears to be common practice—an architect should be appointed consultant. But he should not lay down the law. Some architects have the idea that an architect, if employed at all, must always be in charge. But in the case of a bridge, for instance, the form and main architectural quality arise from the engineering solution—it requires a great understanding on the part of the architect to be really helpful. On the other hand, the engineer, if left alone, even if he has produced a masterly design. is likely to mar the whole effect by unfortunate detailing of abutments railings, etc. The author believes that this happened even with some of Maillart's bridges.

Even if the collaboration between architects and engineers can thus assume hundreds of different forms, according to the job and the personalities involved, there is as a rule no difficulty about it. In the overwhelming majority of cases it proceeds smoothly enough, even if it is, of course, rare to find the ideal collaboration where two friends work together in complete understanding and with great enthusiasm for a common aim.

Of course, here as elsewhere the play is spoiled by bad direction and bad acting. The quality of the job depends on the quality of the leadership, and mediocre leadership is the most frequent cause of bad design. But to do anything about this is at best a long-term business.

Apart from that, it is when the conditions for a fruitful collaboration are not present that frustration and difficulties arise. It has been suggested that the main requirements for success are:

(1) Clear undisputed high-quality leadership.
(2) That the leader should have access to all relevant information and advice.
(3) That he should choose or at least approve of his collaborators.
(4) That they should be available right from the start.

These requirements are very rarely met, partly because the need for them is not understood, and partly because there are inherent difficulties in the way of meeting them.

Some of the greatest difficulties arise from the interpretation and evolution of the client's wishes and his sometimes enigmatic identity. The fount of all decisions about a job is the client's wish to have something built, coupled with his ability to pay for it. He is the buyer, and is entitled to decide what he wants to buy.

Unfortunately he cannot see what he is buying, he has to buy the 'cat in the bag'. He wants something made for him, and therefore he cannot avoid the obligation of explaining what he wants made. But that is exactly what he cannot do—owing to his lack of technical training. The client does not really know what he wants—or only in a vague general way—until the architect has put pencil to paper and shown him what can be done. Policy depends on possibility. And possibility is technical—a design matter. And not unnaturally, the client will not only want to know how his need can be met, he will also want to know the cost of the offered solutions. This is an inherent difficulty, which it is almost impossible to solve. Before the cost can be estimated, the whole design should really be decided. Naturally the client does not want to spend a lot of money before he knows what he is buying, and this means in practice that the vital decisions are made in a hurry and without proper technical advice, since engineers—structural, mechanical, or electrical—and contractors are not yet appointed. And the harm done by hasty or ill-considered initial decisions may be difficult to undo.

Actually this whole business of establishing the correct brief for a job bristles with difficulties. A full discussion of it is beyond the scope of this Paper, but it would certainly repay closer study, because it is both the most important and the most neglected aspect of building.

In an excellent paper[1] Llewelyn Davies has pointed out that the study of building needs has been sadly neglected by modern architects. They have tried to put the responsibility for the architect's programme on to the client, but really it is a matter of architect-client collaboration, and of scientific research sponsored by the state or private institutions like the Nuffield Foundation's division for architectural studies. Far more harm is done by building the wrong things than by building things wrongly. And it is as often as not the clients who want the wrong things built, because they do not know any better. The architects have a responsibility to the public, to society, or to Architecture with a capital A, and it is often the clients who are the main obstacles to good design. In such cases the architect is in a very difficult position and his only remedy may be to resign.

It can also happen, contrariwise, that it is the client who is the main inspiration—but to be a good client is difficult. There are two roads to success in this matter: either the client should interfere as little as possible and leave his technical advisers a free hand to make minor policy decisions after having acquainted them as fully as possible with the whole purpose of the undertaking; or the client should take an intelligent interest in the various technical possibilities and work with the architect or engineer to find the best solution. The point is that wise decisions must be based on a knowledge of facts, and if the client has no time to absorb the relevant facts, he should leave the decision to someone who has, and whom he can trust. If he interferes like the proverbial bull in a china shop, he is his own worst enemy.

The situation is not much better when there is no easily identifiable client—and this is becoming more and more common. Who, for instance, is the client in the case of a large teaching hospital? The government agency who appoints the architect? The medical staff? The patients? It may be difficult to find anybody who really can take decisions, but there may be many who have power to put spokes in the wheel. In such a case the establishment of the brief may be more important—and more difficult—than the making of the design. It may be the same with a very complicated factory, where processes of production may be the most important factor in the design of the enclosing shell. In such cases the leader of the design team should be perhaps the production engineer, or the clients themselves.

Another set of complications arises from the growing mechanisation of site work and the rapidly increasing importance of factory-produced components. Knowledge of these processes and their economic import is also required at the design stage, but the possessors of this knowledge—contractors and manufacturers—are certainly not officially part of the design team. The engineers are appointed somewhat too late—but can perhaps still influence the design. But the contractors are appointed only when the design is finished.

The fact is of course that the technical revolution in the building industry has outstripped the organisation which was devised to cope with a much simpler form of building. And so it can be seen that the whole set-up of client, architect, engineer, and contractor—with or without quantity surveyor—is being by-passed or disregarded in so many cases. Large contractors and builders increasingly prepare their own designs—architecture included. These designs are certainly closely integrated with the firms' structural resources and techniques—they are meant to be competitive and are designed with an eye on cost. And it is the failure—or reputed failure—of sections of the architectural and engineering professions to design competitively which encourages this development. But such designs on the other hand

[1] R. Llewelyn Davies, [F] '*Deeper knowledge, better design*', ARCHITECTURAL RECORD, Vol. 121 (1957), p. 185.

tend to disregard functional or architectural requirements—they are just as lop-sided, only in a different direction. It is total integration which is wanted, but how is it to be achieved?

The author can offer only a few tentative suggestions which will certainly not cover the whole complex field, and which may be impracticable—but which he hopes will offer points for discussion.

Somehow clients—and there ought to be a recognisable client or client's representative—should be made to understand the over-riding importance to themselves of establishing the right brief and getting the best possible design, and that they ought to be prepared to spend effort, time, and money on it.

The first step is to choose an architect or engineer to be in charge of the design. This step is fraught with consequences, good or bad. It is like choosing a doctor in an unknown town, he might kill or cure. Doctors, of course, have their patients completely under their thumb. It would not be fair, and at any rate would be very difficult, to treat clients in the same way. The author thinks—and to some this will be heresy—that the client should be allowed to have a little peep at not only one 'cat in the bag', but at several, before making a final decision. He should be allowed to approach several architects or engineers and ask them to submit sketch designs to enable him to see how they would tackle the job. Such designs should be paid for of course, and moreover it should be understood that the designer should be entitled and expected to obtain advice from allied technologists as required and pay for that too. The practice whereby architects put themselves under obligation to contractors and others who are prepared to work on a design for nothing should not be encouraged. But the fee to be paid should be much less than the present R.I.B.A. scale. The author thinks it would be a very good thing if there could be an element of competition in design—that is sadly missing in the present arrangement. And designers might be prepared to make some effort towards obtaining a job and pit their wits against others on a basis more or less of getting their costs paid. But there are pitfalls!

Anyhow, even if only one designer is approached, he should assemble his team of consultants in agreement with the client and on the basis of a sketch design have his brief clearly established. And then he should be left in peace and given time to get on with the job. If advice on contractual methods is essential for his design he should have authority to obtain such advice, or he might even advise his client to nominate an efficient and reliable contractor.

Each designer would probably gradually assemble a team of collaborators with whom he is used to work—heating engineers and so on—and there would be no objection to some or all of them being united in one firm. But it might be difficult in practice to provide the best possible service in all branches and at the same time provide balanced employment for all departments, unless they were also acting independently in conjunction with other chief designers—and then the problem is more or less back where it started. But there is a value in having a few allied technologists in an office who can deal with smaller jobs or jobs of a particular kind, because it provides a lesson in collaboration for the staff.

The practice of having the contractor prepare his own designs can work very well in such cases where the integration of the design with the method of construction is a major consideration, because that is undoubtedly the best way to achieve it. The author is here thinking mainly of engineering structures such as marine structures and special industrial structures like chimneys, silos, etc. It can work extremely well, provided the contractors are good designers. To emphasise this it might be better to talk of the designer doing his own contracting. It might even work in housing when a firm has successfully developed its own system of building. But in such cases it would not do to let the firm be responsible for the architecture as well, unless there should happen to be a Nervi or Candela in charge. The principle that the client should have his own professional adviser to look after his interest should remain, and for all really important jobs it should apply to all engineering services as well.

To obtain the right design is the important thing, because that is the same as serving the client's true interest. That is exactly the duty of the two professions, a duty which, on the whole, engineers and architects strive to perform to the best of their ability, in spite of the fact that the financial reward happens to be almost inversely proportional to the effort put into the job—an oddity which it may be difficult to do anything about.

Now that practically every occupation is elevated to the status of a profession, designers may have to shed some of their conceit on that score, but the essence of their professional code is to create an atmosphere of professional integrity which is the client's best safeguard, and which should be preserved, whatever happens.

DISCUSSION

Mr. A. R. F. Anderson [*F*] (Messrs Anderson, Forster and Wilcox) said that although architects and engineers might at present collaborate quite happily, they should be looking to the future, not to the past.

During the first half of the 20th century, engineering services had become as much a part of a building as the basic architecture and the basic structure. To get them established early was almost more important than anything else; in particular, when planning buildings in central London, with planning controls (of which he approved in principle, although not always in detailed administration), by-laws, and sanctions for all sorts of things, the engineering services had to be considered at the very beginning. For example, heights of buildings within certain angles of light or heights of lift over-runs (a high-speed lift nowadays needed about 30 ft. of travel from the last floor served) might immediately affect the whole envelope of the building.

More and more space was now required in the heart of a building to accommodate the air-conditioning and heating-and-ventilating services. For the former, vast duct sizes were required and the planning of these ducts in relation to the whole structure raised basic design problems. The derived depth of a beam might be impracticable because a duct had to go underneath it. With such problems as these the work of the structural engineer and the mechanical engineer assumed immense importance.

The architect must bring together, and collaborate with, all the different experts and consultants, although it might be that the engineer of the present or of the future might combine advice on all structural and mechanical problems.

Mr. H. J. B. Harding (Consulting Engineer) said that the key to the two papers was in the last paragraph of each. The emphasis was on collaboration rather than rivalry and with this he concurred. He wanted to mention the subject of training, for he had had the interesting experience in his own family of observing at close quarters the education and subsequent development of a civil engineer training at the City and Guilds College, and of an architect training at the Architectural Association, and the development of many of their friends in both professions.

There were many different kinds of civil engineer and even more types of architect, for the fields covered by both professions were so wide. The architect had a harder part to play because he had to divide his personality into more contradictory fields ranging from artistic imagination to the interpretation of contracts and the supervision of work. In both cases there was the contrast in talents between the academic or artistic and the essentially practical or executant. The combination of high attainment in both fields was rare, but both were important. Consideration might be given as to whether, in both engineering and architectural colleges, instead of trying to reach a higher and higher theoretical standard for everyone, two separate streams could be formed after a certain standard had been reached. Thus in each profession, it would be possible to develop along the line of natural ability, whether predominantly practical or creative and theoretical.

A change which had taken place in Mr. Harding's own generation was the way in which civil engineering contractors had taken on academically educated men and trained them on their staffs in a way which had been rarely done before the 1914–18 war. Now the staffs of leading contractors could bear comparison professionally with those of consultants or government bodies.

Building work was carried out in a quite different manner, and in recent years it seemed that the older type of building superintendent rising from apprenticeship, was being ousted by the quantity surveyor in actual charge of work. Mr. Harding asked if architects could work for builders as civil engineers did for contractors, or was that professionally discouraged? Building work could provide a valuable field for the practically-minded architect.

In a discussion on practical training, it had been suggested that setting-out and some similar work could be done by sub-professional or technical assistants. There was a danger in this, for employers, especially in times of recession, were tempted to employ the cheapest labour available. If they were encouraged to use non-professional men for smaller work and detailing, a field of practical training would be greatly reduced for both engineers and architects.

In the past there had been rivalry, chiefly over disputes as to the distribution of credit, and the natural divergence in temperaments, but collaboration was now of an importance far exceeding such trivialities. More intercourse between the professions could have an educational effect on both of them, bringing a better appreciation of beauty to the engineer and of the realities of below-ground work to the architect.

Today, architects and engineers had as their principal clients, large corporate bodies, both industrial and national, who surrounded themselves with bodyguards of accountants, lawyers, and quantity surveyors, so that it was most important that the two professions—engineers and architects—should stand together against attempts to belittle their position and whittle away their professional authority.

Mr. S. E. T. Cusdin [*F*] (Messrs Easton and Robertson) suggested that the Papers had been written about institutions and institutes, architects and engineers. His plea was for the individual, who was, of course, human and subject to all the frailties of likes and dislikes, and the occasional quite ungovernable hatred; it was on these terms that architects and engineers met in practice.

He had searched the R.I.B.A. code of practice to see what provisions were made for collaboration. He found it contained only one item. In the engineers' code of practice there was not even one item. It would seem, therefore, that there was a case for a simple statement by the two societies. He did not suggest that they should tie themselves to a recognised code of joint behaviour, but they could get together much more quickly if there was a statement which they both recognised was common in good behaviour as between themselves.

Respect for each other had been mentioned as a starting point for collaboration and he would like to combine with that the recognition of credits whenever architects and engineers associated together.

Contracts were also a thorn in the professional side. Engineers had one type of contract and architects had another. There was no guidance about it, whether applied to either power stations or other large buildings. There was no clear statement which both parties recognised.

His next point had a much wider context and it was one upon which any joint committee would find it difficult to agree. There ought to be a statement of recognised boundaries or spheres of influence; duties should be tied up a little closer as to where engineering began and finished. This would eliminate the need to exchange letters on joint appointments on a contract or project. It would be known almost automatically where one profession began and ended with the purely practical things both had to do. Such a statement would not commit the engineer to designing a cathedral or the architect a motorway. It would only be called upon when both recognised their limitations and wished to find a basis for mutual work.

Mr. E. A. F. Johnston (Ministry of Finance, Northern Ireland) confined his comments entirely to buildings. His views, he said, were more in harmony with those of Mr. Mathews, perhaps because for many years he had worked in very close co-operation with architects and had the highest possible regard for the profession.

The design and erection of buildings was a team operation between architects, civil, electrical, and mechanical engineers, quantity surveyors, and contractors. He believed there would be far more expeditious construction and greater economy in building if the contractor were appointed at the planning and design stage, so that he could have an opportunity of expressing his views on various points.

This team of professional men must have a leader and he accepted the architect as the natural leader. But he had some doubt as to whether the present-day training of the architect, particularly on the scientific side, really equipped him adequately, when perhaps more than half the cost of a modern building was accounted for by the engineering services.

He also felt the architect did not concern himself sufficiently with the cost planning and control of these engineering consultants, and furthermore that he did not take sufficient interest in the site-execution side of the work.

So far, said Mr. Johnston, his remarks appeared critical of architects. He could make just as many criticisms of young civil engineers, particularly at their post-graduate stage.

Mr. Leslie Turner (Consulting Engineer) said that the days of the master-mind—the 'archineer' or the 'engitect' had passed, except in the very occasional individual; and one must accept the architect-cum-engineer or the engineer-cum-architect combination. With understanding and reciprocity there was no reason why this method should not produce excellent results.

He understood from a recent lecture by an architect that an architect had no time during his training but for a most superficial study of engineering matters; likewise, engineers had little time for the assimilation of architectural precepts.

Having accepted that split personality, what was the soundest basis for collaboration? In addition to mutual sympathy, Mr. Turner suggested that it was an agreement on definition of duties and responsibilities. In modern architecture, he could not say what these should be; it might take twice as long to design and alter details for the holes for services, etc., in a hospital than to design the structure itself, yet, each hole might reduce the cost of works at the expense of far more time in the drawing office. Again, modern work might take two to three times as long to design as to construct.

Mr. Turner deprecated the use of the architect-engineer-contractor combination, where the client had virtually no control or lasting guarantee. The case of new techniques might raise an infrequent reason for employing an engineer-contractor combination, but the client should extract a firm guarantee for some years (if he could). There were so many variations and possibilities that each case should be investigated technically, economically, and legally before entering into a contract, because, in the ultimate analysis, it was professional ability that counted—not an insurance policy, even if such could be obtained.

As to who should be finally responsible for works, the decision was not difficult. An architect should be in charge of domestic and public buildings, office blocks, and the like, where final appearance was the ultimate test. An engineer should be in charge of essentially civil and structural constructions. The intermediate case of an industrial building could be tackled equally by the engineer or the architect best suited to the understanding of the processes involved in that building. Here the engineer usually had a great advantage and his services should be sought far more than they were today. The services engineer was generally even more specialised and was not trained to lead in buildings.

In all cases, both professions had to collaborate intimately, and whoever took precedence should ensure that the other had supervisory rights in his own sphere on the work and that direct contact with the contractor could be exercised, with, of course, due notification to all concerned.

On the whole, Mr. Turner was content to let the present system of architect-engineer or engineer-architect continue and evolve as it would, provided each profession was granted its due reward and credit.

The only other system he would consider was the additional appointment of an independent business organiser to control the whole team, but he must act professionally and not be the contractor profiting from the job. This method might conduce to economy, but it was very doubtful if the art of architecture or the science of engineering would prevail.

Mr. Turner was well aware that architecture reflected the conditions of the day and that modern architecture was at present largely hamstrung by mechanism and the lack of co-operation of the building trades unions. But means had to be found of interlacing curvilinear main and subsidiary aspects to relieve the boredom of the modern trabeated elevation when built in reinforced concrete. For such to be incorporated the structural engineer must be first in the field, and it would be a potent reason for either nominating an engineer or for the very earliest of collaboration between an architect and an engineer.

So Mr. Turner's final conclusion was that a client should select his chief technical adviser from among those best fitted for the job.

Mr. H. C. Husband (Consulting Engineer) said he believed the first joint meeting between the Institution and the R.I.B.A. had taken place on 12 March 1901, when a Paper[1] on the aesthetic treatment of bridges was presented. Opening the discussion, the President (James Mansergh) had said[2] that the Paper had been accepted '*just at the time when . . . a suggestion had been received from the Royal Institute of British Architects that an endeavour should be made to devise some mode by which the Institution could collaborate with that body in the designing of important bridges. . . . The Council had not seen its way to offer any practical suggestions in that respect, but it had invited to the Institution . . . members of the Royal Institute of British Architects and he hoped some of them would take part in the discussion.*'

Mr. Husband drew particular attention to the words 'practical suggestions'. It was little use talking about the desirability of engineers and architects working together unless practical ways and means could be devised, not only for the benefit and satisfaction of the engineers and architects, but in order that their collaboration would produce better works and that the collaboration should be arranged for its efficiency and economy to be in the best interests of the client or promoter of the project. Sir Benjamin Baker had said:[3]

> '*It was not necessary to labour the question of the collaboration of architects and engineers. An engineer was really such a broad-minded man that any question of jealousy or false pride could not enter into the matter. Engineers consulted each other; on an electrical question they went to one man; on a question of locomotives to another; on a question of waterworks to another; and the idea of any jealousy or false pride in consulting architects was outside the question.*'

[1] Joseph Husband, *The aesthetic treatment of bridge structures*, MIN. PROC. INSTN. CIV. ENGRS, Vol. 145 (1900–1901), p. 139.
[2] *Ibid.*, p. 174.
[3] *Ibid.*, p. 207.

Whether or not this was quite true in 1901 Mr. Husband did not know, but if it was reasonably true today the difficulties must be largely financial.

Sir Benjamin had said further that in the collaboration of engineers and architects, '*there would have to be a constant seesaw of the plans backwards and forwards*'. Mr. Husband had little doubt that this distinguished Past President knew what he was talking about in 1901.

If a bridge was required, the client expected the engineer to design it, and if Sir Benjamin Baker's advice was to be followed, then the engineer should not be too proud to get an architect to help him. If it was a large building, most architects would be wise to arrange to collaborate with an engineer or engineers. But 'the seesawing of plans backwards and forwards between engineers and architects' could be a great waster of time and money. Not only clients had appreciated this, but many large contractors had discovered that good and economical results could be achieved by employing on their staffs qualified architects and engineers working closely together under the same roof.

This was not an occasion to discuss the possible evils of 'package service', but it had been Mr. Husband's personal experience that most large modern structures, where there was a good deal of repetition in design in one form or another, could be efficiently handled by a well organised combination of engineers and architects, working in the same office, including the proper design of the structural and other engineering services.

He considered more encouragement should be given, both by the Institution and the Royal Institute, to real partnership, both in private practice and within public organisations, of architects and engineers to deal with the building problems of today. In this way, the problems of close technical collaboration, and the retention of respect, of client and contractor alike, could be achieved. The balancing of administrative, designing, and supervising staff as between the two disciplines would depend on the type of practice.

But whether the job were engineering with a little architecture, or architecture with a lot of engineering, or simply one or the other, in any event there would be an *organisation* well designed to serve the client.

It was important for architects and engineers, in their own ultimate interests, to do the whole of the work which their clients expected them to do, and to do this in the most economical manner, and to charge accordingly. If they carried on with what Sir Benjamin Baker had referred to as 'the seesawing of plans backwards and forwards between engineers and architects', they would be following an idea of 1901 in what, for better or worse, was a much more streamlined age.

In a few years, if engineers and architects did not get together as partners, then, as far as big building projects were concerned, these would soon be handled in their entirety by contractors employing their own technical staffs. Mr. Husband thought also that the contractors would find ways and means of overcoming the main financial disadvantage of this arrangement—the cost of preparing unsuccessful designs.

Mr. Greville Rhodes [*F*] (Messrs Norman and Dawbarn) said that collaboration between engineers and architects was part of a very much larger question—how much engineers and architects, working professionally, were prepared to see their activities and their influence in society gradually diminish over the years in favour of the 'package service'. The enormous potential the package service could bring to bear, in a sense, against engineers and architects working professionally should not be underestimated. The first reason was economic power, and this became more and more important as projects got larger and larger, and more capital was needed, and so on. Secondly, all the necessary skills for the design and erection of a complex building could be assembled under one roof on a scale which made smaller specialists units within that organisation of an economic size.

He found no comfort in Mr. Arup's statement that the design side of the 'package service' was lop-sided. That would not always be so. With their skills all under one roof, with their practical experience on the contractual side, with their foreknowledge of what plant and equipment they could bring to bear on any project, the 'package service' contractors could well become economically and architecturally highly competitive.

How were specialist consultants to combat this? It was no use solving the problem of today, in so much as it existed, because any remedial measures taken now could only be effective in a few years' time and by then the complexity of the problem would have increased. The most practical answer was for architect and engineer to combine in a similar way. The separation of the architect and the engineer into separate adminstrative units was false, and although Mr. Rhodes agreed with previous speakers that they were different people and must remain so, he nevertheless felt there would be enormous advantages in working together under one roof and in this way becoming competitive with the 'package service' in the future.

The merging of strong individual personalities would be difficult and could not be rapid, but was essential for survival. Education on a different basis, stressing the overriding importance of collaboration and the obsolescence of the 'personality cult' would go a long way to help.

In a combined firm of specialists, the individual sections would have to be large enough to be economic. This was sad for the smaller offices and many would regret their passing. Much of the pioneer work of the past had been done by them under the strong influence of an individual architect. But these were the pilot schemes of modern architecture and now that the scale of everything had increased, smaller schemes could hardly have the impact they once had.

If larger units were necessary to compete with the 'package service', smaller architectural firms would have to combine to an economic size which would enable them to have their own specialists.

In conclusion, a closer collaboration and complete reorientation of both professions was necessary if they were to retain their present position of leadership.

Both of the authors had spoken of the importance of the 'master mind'. Mr. Rhodes accepted the fact that there must be a leader, and where the project was primarily a building, it seemed as though the architect was best suited to be the team captain, but, for two reasons, he did not accept the implication of the term 'master mind', that the leader was the fountain-head of all creative design. First, because the influence of specialists should be felt at all stages of the design and even in the formation of the brief, for technicalities were no longer merely details to be fitted into the design—they were becoming fundamental. Secondly, an architectural firm, if it was to turn out good work, had to be receptive to the ideas of its staff. In the 'master mind' concept, the ideas were going the other way. The 'personality stamp' was not an essential ingredient of good architecture.

Mr. L. Scott White (Partner, R. Travers Morgan and Partners, Consulting Engineers) agreed that the 'committee method' of design was bewildering. Admittedly in a very big scheme subject to the control of a committee, such committee must make decisions. These decisions, however, should be restricted to preparing the brief and instructing an architect and/or engineer; to considering and approving sketch plans and later the proposed tender drawings and specifications and approving the placing of the contract; and receiving reports of progress.

Revisions to a scheme after the start of a contract should be most carefully avoided since they caused more delay and irritation than almost anything else.

There could be many satisfactory solutions to a building problem, but perfection in *all* aspects was almost impossible. Compromise was usually necessary and this was where the 'master mind' had to sit in judgement to select the best solution.

Early co-operation between architect and engineer, even in the sketch plan stage, was essential. Schemes which called for unusual and expensive structural treatment might possibly be avoided; on the other hand, if an unusual or outstanding type of structure was the answer required—no matter what the cost—this was where early decision was of tremendous advantage.

In the United Kingdom, competitive bidding for building contracts was the normal procedure. For this purpose, designs and details were fully determined in advance, and specifications and quantities were prepared in detail. By this procedure, however, one important element was sometimes overlooked—the overall administrative capacity and plant resources of the contractor. In a relatively small contract this was of little consequence, since all tendering contractors should be adequately equipped or could hire the plant required to deal with the contract. On an outstandingly large contract, however, it might be advisable to select a contractor by a preliminary competitive tender, or never to select a contractor by agreement with the building owner. When a selection had been made, the contractor could then be consulted by the architect or engineer on practical problems. By this means economy, and certainly speed of completion, could be assured.

The execution of both structural and mechanical engineering services was sometimes carried through by one engineering consultant. Mr. Scott White believed that this combined field was too wide to be covered by one organisation. It was better to divide these responsibilities and to ensure that specialist minds concentrated separately on structural problems and mechanical services. The two services must, however, be interwoven and co-ordinated. This was a very important function of the co-ordinating architect or engineer.

The proposal (which the author himself considered heresy) that a prospective building owner should have a little peep at more than one 'cat in the bag' was already provided for by calling for competitive schemes, which were submitted to and judged by an adjudicator who might, possibly, have been recommended to the developer by the Institute or the Institution. When the selection had been made, the developer should go forward with complete confidence, present his requirements fully and clearly to the architect or engineer commissioned to do the work and co-operate with

him as harmoniously as possible during the planning and construction of the works.

Mr. Arup's tilt at the 'financial reward' being inversely proportional to the effort put into the job might have been taken by some as a bait to promote discussion on the relative architect-engineer effort and reward. Mr. Scott White, however, understood it as a complaint that when a thoroughly conscientious architect or engineer put his utmost effort into producing the required building as economically as possible, there was the anomaly that the more effort he put into the work to save his client's pocket, the less was his reward. This line of argument was somewhat specious, because his most acceptable reward was giving satisfaction to his client.

Mr. R. Llewelyn Davies [*F*] (Director of the Division for Architectural Studies of the Nuffield Foundation), who had been trained as an engineer but practised as an architect, referred to the broader aspects of the relation between the two professions, rather than the problem of individual collaboration. In thinking about these questions, it was important not to gloss over the very deep and essential differences between the two subjects of architecture and engineering. One could only see how they fitted together and how perhaps in the future they could help one another more effectively if they faced the very big gulf that really separated them.

Engineering was a precise discipline. It had an established theoretical basis. It was developing in common with most other precise disciplines down the path of specialisation and research, with continuous accretions and additions to the body of knowledge, postgraduate training, and the whole machinery of the modern scientific subject.

Architecture, on the other hand, was not at all a precise subject, and it was a great mistake to talk as though it were. The factual basis of architecture did not exist in itself. The factual source of the architect's work and inspiration came from other subjects—from engineering, from the physical sciences, the sciences of materials, the social sciences (which told how people lived and used their buildings), and some of the physiological and psychological sciences.

Above all this, and apart from it altogether, was the skill or art of synthesising the very many facets of building design into a whole. This was the nature of architecture, and it was brought out very clearly if the kinds of teaching were compared. He did not refer to the teaching at the Architectural Association as training, because if it was compared with the way students were taught in the School of Engineering it was not systematic training. In engineering, knowledge was imparted and the ability to use it in certain definite ways was tested by examination. The first thing he had been asked to design in the school of engineering was, in his very last year, a small bedplate for a sewing-machine. This was the only exercise in synthetic activity which came into his training. He went from there to the school at the Architectural Association and was immediately asked to design a swimming-pool. This was the essence of the difference between the two subjects.

What could engineers and architects do for one another? The answer was very obvious, and they had been aware of it for a long time. The engineering discipline, the attitude to work, the attitude to knowledge, were all things more of which were needed in the architectural profession. Far more important, they were looking to developing knowledge. Engineering was one of their main sources of inspiration. The creative thought in modern architecture in this century very frequently derived, deep down, from engineering thinking.

On the other hand, what could architects do for engineers? What could they give to engineers by closer collaboration or joint training? At first sight, very little: engineering was doing fine; it was a very good subject and was giving time to both specialisation and research. But more broadly, perhaps, there were problems. Where were the future Rennies and Brunels? Did compulsory Greek and Latin really broaden the minds in schools of engineering? Might it not be better to think a little more about design, which, indeed, was the only way in which the bed-rock work of the engineer could flower and come to something great, whether he did it by himself in a bridge or with his architect colleagues in a building? It was the design process that really made things come to life. This was what association with, and understanding of, architects could give to engineers.

Mr. J. A. Neill (Consulting Engineer) believed that economic pressure had led to a slackening of moral fibre. It was all too easy—he did it himself—for the engineer to blame the architect and the architect to blame his clients when things went slightly astray. The fault lay in themselves. It was up to each one of them to be sure of what he did and more important still to be sure that those who instructed had given enough thought to their actions. This should increase confidence between the two professions and such confidence would bear fruit and propagate itself. Builders would have more confidence in them, and building costs should lessen as a result. Clients would have more confidence in them, and they would prosper. He was perhaps on dangerous ground in predicting that the confidence of district surveyors in them might increase but if it did they would lead quiet uneventful lives.

The point he was trying to make was that it was possible to reverse the vicious circle. If they tried to stiffen their moral fibre, freedom from economic pressure should follow.

Mr. Bryan Westwood [*F*] (Messrs Westwood Sons and Partners) said that the engineer and the architect were not so much two different people as two different attitudes, both of them essential, to the building problem. There was very little danger that architects would try to be self-sufficient. They had done enough structural examinations in their course to realise their own limitations. But perhaps in England (particularly), which was a country with a literary tradition and a rather factual one, the engineering student and perhaps many engineers, too, did not realise to the full how much the colours and textures of materials could contribute to the final building, and transform it from a mere building into a work of art.

With regard to the point that the complexities of modern buildings could not be grasped by a single mind, he quoted Descartes who had said buildings where a single architect had planned and executed were generally more elegant and commodious than those which several had attempted to improve. If that was the case, the lesson was obvious. There had to be more than one person working, but the combination had to become like one all the time, even when two people became three or four.

Finally, he would like to quote a question that had been put to him. Recently, after giving a lecture at a public school he had been asked by one of the boys: 'How is building to remain exciting when engineers can easily solve any structural problems?' He had answered that building would remain exciting because it was going away now from being a mere rectilinear exercise into something far more organic. This was the final moral, he thought, of what he wanted to say. When that stage was reached, the engineer and the architect simply had to work together. They could not produce buildings both structurally sound and aesthetically attractive without both kinds of mind. It might be possible for one man, like Nervi, but both kinds of minds had to be there.

Mr. J. R. Murland (Consulting Engineer) said that most of the difficulties were soluble from the old proverb which was applicable in this case to architects and engineers and above all to the client: 'Don't keep a dog and bark yourself!' It was really as easy as that.

His life was pleasanter when dealing with architects who did not know anything about engineering than when they did, though the end result was not necessarily better. The same was true of clients. His work was easier when he was serving a client who knew nothing and could be told: no doubt the architect shared his feelings on that point.

Mr. Cusdin had mentioned the extent to which the Institute and the Institution referred to each other in official documents. Mr. Murland pointed out that the consulting engineer had no existence whatever in the R.I.B.A. form of contract. His legal position was technical adviser to the architect, and Mr. Murland did not object to that position personally. But the consulting engineer was not recognised and strictly, in law, if he wanted to give an instruction to change the size of a screw, he had to go through the architect, the main contractor, and down!

So far as building services were concerned, it was very hard to separate the electrical from the mechanical engineer. One was involving the other the whole time. The architect was entitled to ask that he should deal with one man. That one man might have in his office a proper specialist: he could not know it all. But so far as building services were concerned, the electrical and mechanical engineer must be visualised as one individual and not two separate ones. It was important not to multiply the people who had to be called in for consultation, if it could be avoided.

Mr. Murland did not see why he, as a consulting engineer, should not agree to work for a contractor as part of a 'package service' any less than for any one else who wished to employ his ability. But there was the implication—though he doubted if it really existed—that there was something not frightfully respectable about the 'package service', an implication that consulting engineers and architects were stepping down from their professional pedestals. The cynical answer was very easy. There was a quotation that some might not have heard: 'Let us take the broad long-term view! How does this affect us?' It was as easy as that: as soon as it ceased to be not respectable he did not think anyone would worry.

Mr. John Powlesland (Consulting Engineer) said with regard to the 'package service' that in other industries where there was a very complex design problem, such as the design of an aeroplane or a ship, the service offered was invariably of the package type. One organisation controlled the whole of the design. Its success was the result of one man controlling the design team, it was usually very large and included not only designers but production and operation advisers. The leader probably did not understand all the details of the design, but he understood the whole thing in principle, and success depended on him. He was the manager or the 'master mind'.

The 'master mind' would not arise out of anything other than the package service, because no one else would pay him the salary he deserved. The difficulties under discussion arose in the absence of this overall design manager, because everybody tended to overrate the importance of his own individual contribution to the whole design.

The buildings on which the problem arose would usually be judged ultimately as architecture unless one fell down, in which case it would be judged as an engineering structure.

During the planning and construction stages, the client was very much interested in the cost, and one of the engineer's fields was surely to advise the architect on the cost, not only of his structural design but on his proposed method of construction. For that reason, during the design and construction stage the engineer might assume greater importance than he would warrant in the larger view. It should be part of the engineer's job to be a specialist on costs, and he should know much more than the techniques of structural design.

Some of the men who possessed this knowledge had also some architectural appreciation, and in his opinion the architect and the engineer should meet on equal terms at the beginning of the job. The only way this could be done practically was for them to combine in some permanent association between suitable characters who found each other stimulating to work with.

Mr. W. W. Davidson (formerly an Engineering Inspector with the Ministry of Health), referred to Mr. Mathew's suggestion that engineers did not collaborate with architects as they might. The Royal Fine Art Commission, in their fifteenth Report, 1957, referring to a very necessary major bridge over the River Ouse at St. Neots, had 'asked that an architect and possibly a consulting engineer be employed on its design'.

He went on to criticise a number of structures for which, he believed, architects had claimed credit.

The Chairman interposed, in defence of the Royal Fine Art Commission, of which both Sir Allan Quartermaine, Past-President I.C.E. and himself were members, that the bridge at St. Neots was the work of an engineer. The Commission had, in fact, suggested that not only should the engineer perhaps have an architect to help him but another engineer.

Mr. W. E. J. Budgen (L. G. Mouchel and Partners, Consulting Engineers) said that both Papers referred to the need for successful collaboration, but neither of them defined what this meant. In its lowest common denominator it would presumably mean that both architect and engineer made a profit on the job. At the other end of the scale perhaps it meant that they produced between them a successful work of architecture. And there one struck the first and fundamental difficulty. Could successful architecture be defined? If not, it must be very difficult to collaborate towards it.

It was Sir Henry Wootton who, many years ago, had described the essentials of good architecture as 'commodity, firmness, and delight'. It seemed difficult to improve on this definition. Commodity and firmness were capable of some quantitative assessment, although not strictly speaking until some time after the structure had been completed, and even then only by the relatively few who used or maintained the building.

The third quality, that of delight, seemed to an engineer to defeat definition and in the minds of his architectural colleagues it seemed to be almost as variable as women's fashions.

Frankly, he felt it was useless to ask for a sympathetic understanding of the architectural profession's problems from the engineering profession until there was some greater degree of unanimity as to what was good architecture. Apart from this difficulty, most of the other problems mentioned in the Papers were capable of solution. Difficulties of personal compatibility generally sorted themselves out fairly quickly.

It was, he felt, essential that the engineer should, from the start, have a clear brief from the architect. Was he mainly to advise on engineering economy (which might not necessarily be overall economy) or was he expected to suggest some daring and therefore usually expensive solution to a problem?

Sympathetic consideration must be a two-way traffic. The engineer must always pay tribute to the law of gravity, but nowadays the architect sometimes—particularly with his ideas of shallow beams and slender columns—urged the engineer to design structures which, while not unsafe, were still bad engineering.

As a further point, if the concept of 'delight' was accepted as a necessary part of good architecture and if it was also accepted that this sprang from deliberate aesthetic choice and did not follow from functional design, then, as Burke had put it, the wedge-like snout of a swine, so well adapted to the offices of digging and rooting, would be extremely beautiful. If that conception was not accepted, then the architect must be the leader of the team and this aesthetic choice must be made by him.

Mr. Budgen agreed with Mr. Arup that the engineer should cultivate an interest in architecture, but there was at present nothing in his training which qualified him to make an aesthetic as against a practical choice. This position would probably worsen in the future when the dichotomy between art and science seemed to be widening, so that 14-year-old children were expected to specialise in one or the other. Under these conditions, lack of sympathy between architect and engineer, artist and scientist, would increase and not decrease unless it could be fostered in later years.

Mr. R. D. McMeekin (Partner, R. Travers, Morgan and Partners, Consulting Engineers) said that the two Papers and a critical examination of their theme were somewhat overdue. By that he did not imply that there was any sudden crisis in their affairs, but rather that the situation of architect-engineer collaboration could, like nearly everything else, probably be improved.

It might be argued that they were both the same sort of people inasmuch as they were—in the wide sense—both builders. But it was not as easy as that. They lived and practised in very complicated times; in times when it was very difficult for the architect, with all his artistic traditions and skills, to acquire all those technological and scientific abilities that today's conditions demanded. Just as difficult was it for the engineer, with his scientific background, to master the finer points of aesthetics and planning.

An architect solved many of his difficulties by looking at the drawing board and saying that what he saw there was either right or wrong. In aesthetics he had no proof. But the engineer got his answer by mathematics and if his answer was challenged, he produced his calculations and said, 'That is my proof'. That was, Mr. McMeekin thought, the basic difference between them.

They were different people not because, in the wide sense, they were doing different things, but because they were doing the same sort of things in a different way. They argued from different points of view. But they were both still doing fundamentally what their fathers did. They were building. And he submitted that in their building they badly needed each other.

Speaking as an engineer, he thought that one of the failings of engineers was that they were tied a little too much to slide rules and mathematics. They should train themselves in aesthetics as well as in mathematics. This question was important enough to warrant a review of examination syllabuses. No one would deny that beauty in building was a very important matter, but engineering students were taken through years of training with hardly a mention of it, and they were never examined in the subject.

The training of architects also left much to be desired. They did already receive a good training in structural design, but he often felt that they could with advantage learn more about practical site problems. One learned on site how much easier it could be to draw something on the drawing board than it was to fix it. More young architects should learn that lesson; they rarely went into contractors' organisations as engineers often did. The R.I.B.A. might care to consider the pros and cons of the civil engineer's requirement of having to spend 12 months on site before qualification to corporate membership.

Could there not be a series of reciprocal lectures—architects to engineers and *vice versa*? He felt sure that all could learn something useful from senior men in the other profession.

Mr. McMeekin deplored the idea of competition in design. There was already a good deal of healthy competition; to take it to the stage where an architect or engineer was selected by his skill in preparing an outline design was, in his view, retrograde. But the real fallacy was surely that if there was a competition there must be a judge. And the judge must know at least as much as the competitors. In this case, the judge knew so much less than the competitors that he was later going to ask them for advice—a rather queer situation, to say the least. The client would have to appoint another engineer or architect to decide which was the best design, and if that architect or engineer were high enough in the client's esteem to judge the matter, then the client would presumably have gone to him in the first place and saved everyone time and money.

On the whole, thought Mr. McMeekin, professional standards in Britain were fortunately high and great care should be exercised before encouraging a state of affairs that would tend to bring out the spectacular rather than the best in design.

Mr. C. W. N. McGowan (Head of Civil Engineering Department, Kuwait Oil Co.) said that no mention had been made of the past history of the problem, which was not new. Before the dates of incorporation by Royal Charter (the Institution in 1828, the Institute in 1834) there had been no distinction between an architect and an civil engineer. For example Wren had been as much civil engineer as architect. It was refreshing to find that the two distinct professions, after almost a century and a half, were considering getting together again.

The difficulty of divided responsibility had been overcome in France where architects and engineers worked together under a protocol signed by the two professional bodies. The agreement divided works into four categories, the architect controlling where the engineering work was subsidiary and *vice versa*.

The written contributions are held over until next month.

Royal Palaces in England from Norman to Victorian Times

by John Charlton, M.A., F.S.A.

Given at the R.I.B.A., 10 March 1959. The Hon. Lionel Brett, Vice-President, in the Chair

IN CONSIDERING the mediaeval palaces, and particularly those of the early Middle Ages, we must remember that the king then did more than reign—he actually governed. He was the source of all policy, foreign and domestic, and the courts of justice—and their profits—were his alone. Government was really centralised in the king and not in any single place. Not even in London was policy regularly made and justice done. The king travelled continually about his lands, taking with him practically the whole of such government machinery as then existed: the capital in a sense was where the king happened to be. In the course of time the increasing wealth of the country and the growing power of the different estates of the realm not only gradually curbed the royal power but necessitated some centre to which in an emergency (or, later, as a matter of course) men might resort in matters of public business without having to follow the king, say to the Scottish Marches: that centre was of course Westminster; but for much of the Middle Ages the Royal Household comprised not just the immediate entourage of the sovereign, but the principal ministers of state and their staffs. This had the important architectural consequence that the royal palaces had to provide accommodation for a very considerable body; they had in fact to be Buckingham Palace and Whitehall in one.

Most of these palace sites were in the midlands or south of England and appear to have been quite undefended in the military sense. They might be surrounded by a precinct wall or the like but nothing more. Near the Marches the king's houses were of course defended—at Carlisle, for example—because they were inside the royal castles. And certain ancient or key sites in the south like the Tower of London or Hertford were of course also inside castles.

Near what we may call the provincial palaces, like Havering and Clarendon, there were extensive deer forests rigorously protected by the Forest Laws. These forests were an important part of the Royal economy. They not only provided the sport to which most English kings were devoted; they provided meat for the large retinue; fuel for the palace fires and timber for the building of palaces, castles and ships.

The basic accommodation requirements of the king personally—like those of any substantial landowner of the day—were a hall (the centre of mediaeval domestic life) with, of course, its attendant kitchen; a chapel; and one or more private apartments for his and the queen's use. We shall see something of how these basic requirements were elaborated when we come to consider the palaces of Henry III. But if this talk is to follow the roughly chronological pattern promised it is already time that we looked at the little that is left to us of the Norman palaces.

The most complete and perfect relic is the chapel dedicated to St. John in the Palace and Fortress of H.M. Tower of London. One of the most important of our Norman buildings, this, the earliest surviving royal chapel, has been virtually untouched throughout the ages. It is of considerable architectural interest, for its nave is tunnel-vaulted, as is the gallery in the thickness of the wall above side aisles. The latter are continued round the east end as an ambulatory. The primitive carving of the capitals is the sole ornament of a building which is most impressive for its sombre and massive construction.

My other example is Westminster. This, the greatest of the royal palaces in the Middle Ages, dates back, like Havering, to Saxon times. It was begun by Edward the Confessor who also founded at its gates the Abbey of St. Peter. His palace was roughly where the House of Lords is now. William Rufus began a large new palace to the north. (The distinction between the two is perpetuated to this day in the names of Old and New Palace Yard.) Rufus's building projects were cut short by death, but not before he had built the present Westminster Hall, probably the largest hall of its period in the whole of Europe. Its roof and windows were, of course, completely and magnificently altered 300 years later for Richard II and there have been many repairs in the last 250 years; but structural evidence found during those repairs has shown that the Norman hall was the same size as that we see today; that it was lit by twelve round-headed windows on either side, with a clerestory passage connecting two subsidiary arches between each pair of windows, some of which survive. As might be expected the work was plain, but during the work of conservation a number of early capitals have been found, re-used, and these are now displayed in the Ministry of Works museum in the Westminster Jewel House. The hall was presumably aisled, but there is nothing to show whether its piers were of wood or stone.

The greatest architectural elaboration of the royal palaces is probably that seen in the 13th century during the long reign of Henry III. Most of this work has unhappily been destroyed, but enough evidence can be collected from surviving structures, from such records as mediaeval and parliamentary surveys (not, alas, illustrated), from a few 16th- and 17th-century plans and from excavation for us to arrive at some picture of what the palaces of that pious and artistic monarch were like. Apart from such places as Westminster or Winchester they were generally built, like Woodstock or Clarendon, on open, unencumbered sites and appear to have been laid out in the most casual fashion. Because, however, they usually had to house the same sort of establishment, they probably had some degree of uniformity.

They had always, of course, a hall, sometimes a pre-existing hall of 12th-century date, quite probably aisled. With it went the usual offices; butteries, salsary, etc., and there might be two kitchens, one for the king and his immediate associates and one for the household at large. The king dined in the hall sitting in a chair facing down the centre aisle. Near the dais, or high table, at the end of the hall, a private doorway, sometimes screened off to prevent draughts, led to an ante-room, which is mentioned in several mediaeval records as being assigned to the king's knights—a kind of forerunner of the king's guardchamber of the later palaces. From this vestibule the king could enter his private apartments, generally by a staircase, since they were normally on the first floor. They would include at least one large room, with a bedchamber and garderobe and a private chapel. Close at hand were the queen's apartments, perhaps including a small hall where she could dine with her ladies, and usually a chapel. In addition to the private chapel or chapels there was often a chapel for the household, in some cases at least a detached building near the edge of the palace. Often served by chaplains from the nearest religious house it might act, as at Havering, as a parish church. The king and queen had their own chaplains, whose accommodation is often mentioned in the contemporary records.

Though there may seem to have been little system in the lay-out of the buildings, examination of mediaeval and commonwealth (written) surveys—as well as the few existing examples—suggests that the larger palaces at least had two courtyards. The first contained the great gatehouse (with the almonry close by), stables, storehouses and perhaps the household chapel; the other was formed by the hall

Fig. 1. Westminster Hall: interior looking south

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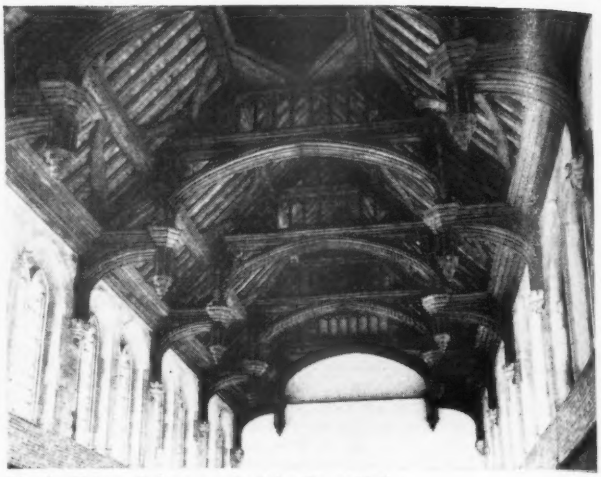

Fig. 2. Eltham Palace: roof of the Great Hall

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and principal apartments. At Clarendon, records suggest, there may have been a third courtyard occupied by the warden of the neighbouring forests.

The palaces of Henry III were splendidly decorated. The interior of most rooms was lined with plaster which in the principal apartments the king's painters covered with a variety of subjects, mainly religious in character, though scenes from mediaeval romances like the Romance of Alexander occurred, e.g. at Clarendon and Westminster. One of their masterpieces must have been the Painted Chamber at Westminster, which though destroyed after the fire of 1834 survives for us in early 19th-century records. This splendid apartment, 80 ft. by 26 ft. by 31 ft. high, was painted in 1236–37 and again, after a fire, in 1266–77. The subjects included, in addition to various Old Testament stories, the coronation of Edward the Confessor and his meeting with the Pilgrim.

The gradual destruction over the centuries of this great gallery of 13th-century art of the court school is a serious loss. I can, however, show you from surviving or recorded examples in churches a few of the figure-subjects of which Henry III was fond: the Wheel of Fortune, which adorned the Great Halls at Winchester and Clarendon, survives for us at Rochester Cathedral; the Seasons, which were portrayed for the king in both painting and sculpture, may be seen, much restored, on the quire roof of Salisbury Cathedral; and a painting, formerly in the destroyed church of Winterbourne Gunner, depicts the Magi in a quality that suggests (as the late Dr. Tancred Borenius recognised) that it may be the work of the court painters employed at Clarendon.

Many rooms were wainscoted, the wainscot often being painted and decorated with gilded stars and crescents, enrichments which were also used on ceilings, which sometimes were decorated in gesso. The floors of the better rooms were covered with inlaid tiles, of which the best contemporary examples come from the chapter-house at Westminster, made *c.* 1255. This has the leopards of England as the principal motif, but there are also representations of Edward the Confessor and the Pilgrim, of kings and queens and of hunting scenes. Of several examples found at Clarendon one, now in the British Museum, had a circular design, recalling contemporary French work at Cunault. Even stained glass was relatively abundant in the more important chapels, the windows of which, incidentally, were ventilated by the insertion here and there of lead quarries pierced with an openwork design. Combined with rich hangings the interior effect must have been of sumptuous colour.

To the 14th century belong most of the mediaeval parts of the palace of Westminster to survive the fire of 1834 and the subsequent rebuilding. Apart from the Painted Chamber the greatest loss is St. Stephen's Chapel, one of the ultimate works of the Decorated style. Its crypt (which now bears its name, but was originally dedicated to St. Mary) is a structure of 1320–27, heavily restored and redecorated in the 19th century. When the palace was in royal occupation it was, however, the main chapel above which was used by the sovereign, a similar arrangement to that at Sainte Chapelle. Another survivor of the same century is the Jewel Tower of 1364–66, which stands, girt by a moat, in the south-west angle of the palace precinct. Designed as a treasury for the valuables of Edward III, it has recently been repaired and opened to the public by the Ministry of Works.

Back now to Westminster Hall, remodelled in 1399–1405 by Henry Yevele and Hugh Herland for Richard II. The side-walls were raised, obscuring Rufus's work, the stone or wooden piers removed and the greatest timber roof in Europe erected. The hall, may I remind you, is 240 ft. by 70 ft. Mr. John Harvey has estimated the cost of the remodelling as a million pounds in modern money. (Fig. 1.)

To close the Westminster tale I may here refer to the two-storeyed St. Stephen's cloister, burnt by and restored after the two fires of 1834 and 1943. About the time it had been completed, however, 1528, Henry VIII transferred his affections to his new palace of Whitehall, the 'gift' of Cardinal Wolsey.

Now for another mediaeval palace famous for its great hall—Eltham (Fig. 2.). The earliest surviving structures are those of Bishop Bek (*c.* 1296–1311), but they are largely obscured by Tudor work. The palace was the scene of some of Edward III's tournaments—it was doubtless with these in mind that he rebuilt the Great Chamber and kitchens—and the place was much frequented by Richard II. It retains one of the two important palace buildings to have come down to us from Edward IV: the Great Hall (his other project was St. George's Chapel, Windsor). Eltham Hall, 101½ ft. by 36 ft., was built in 1475–80, being designed, Mr. Harvey tells us, by Thomas Jurdan, master mason and deviser of buildings to the king. Six bays long, it has a tall, vaulted oriel window at either side of the dais. The elaborately moulded roof is notable for the way the hammer-posts are carried down below the ends of the hammer-beams to form pendants—a very early example of what was to become a fashion.

Towards the end of the Middle Ages Westminster grew in importance and the 'provincial' palaces in particular tended to decline. The long years of the Wars of the Roses must, moreover, have led to serious neglect of maintenance which meant that many of the palaces were probably unfitted for more than a short stay by the court. Thus when, in 1453, Henry VI was suddenly seized with madness at Clarendon and could not for a time be moved, it was necessary to build new kitchens to replace the old ones which were out of commission.

Under the settled government of the end of Edward IV's reign and with the arrival of the Tudors there grew up instead

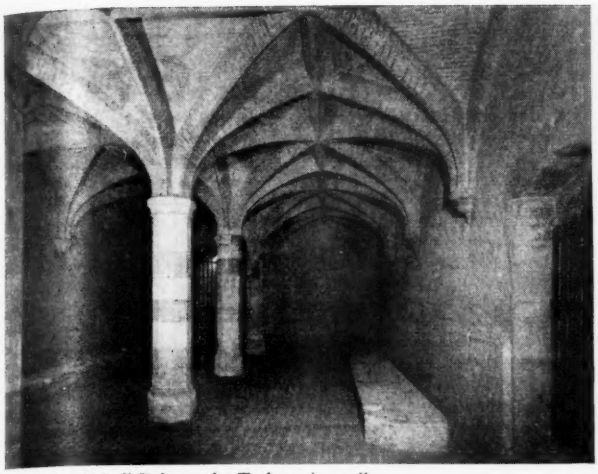

Fig. 3. Whitehall Palace: the Tudor wine-cellar
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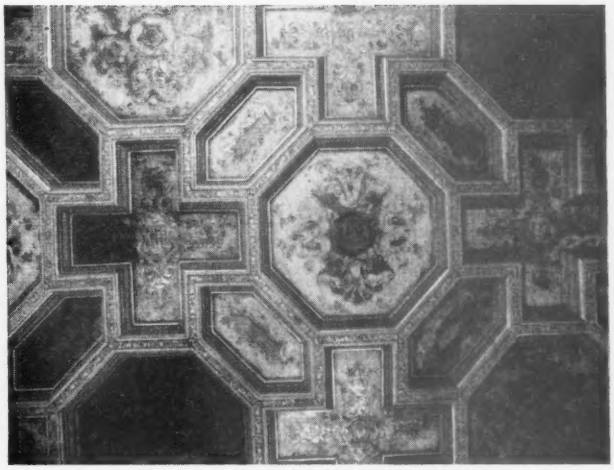

Fig. 4. St. James's Palace: painted ceiling of the Chapel Royal
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other palaces—some new, some old, refurbished and enlarged—along the lower Thames valley, and it is to these suburban palaces with their new fashions in architecture that we must turn.

Henry VII led the way. Continuing where Edward IV had left off—continuing with the same devisers of buildings, master masons and master carpenters—he established a new regime as significant for English architecture as it was for English government. When he chose to spend money on building he spent lavishly and built splendidly, but unhappily his greatest work, Richmond palace, can now be judged only from contemporary documents and pictures. Like its mediaeval predecessors Richmond was not military in intention, but unlike them it was given a castellated dress, with many towers and turrets of varied shape. Something of its quality is preserved for us in the unfinished Thornbury Castle in Gloucestershire. This military panache in architecture—a kind of romantic 'Knights of the Round Table' atmosphere—has its counterpart in the reign of Henry VIII in the many jousts and masques, probably reaching its highest point in the elaborate parade known as the Field of the Cloth of Gold.

These Tudor palaces may now be briefly described, beginning at Eltham and going up the Thames.

Eltham had already a fine new hall. Henry VII brought the rest of the palace up to date and probably laid out anew the outer courtyard. Here Henry VIII spent much of his boyhood and in later years rebuilt the chapel. A late 16th-century plan shows the royal apartments running along the west side of the palace and connecting directly with the hall and chapel. The kitchens, as at Hampton Court, lay to the side of the hall away from the principal courtyard. The palace slowly declined after Henry's day.

Of Greenwich, site not only of a palace, but of Henry VIII's great armoury, nothing is left but a vaulted undercroft beneath the present Queen Anne Block. Early pictures show, incidentally, two great brick tournament towers, designed by Henry Redman, who worked for Wolsey at Hampton Court, and built in 1519.

At the Tower, what one might call the household chapel—St. Peter ad Vincula—was rebuilt after a fire in 1520. Two of Henry's headless queens lie buried there. Henry also built in the south-west corner of the inner ward the Lieutenant's lodging, now the Queen's House and used by the Resident Governor.

At Whitehall, as at Greenwich, only a vaulted basement is left of the Tudor palace. (Fig. 3.) This undercroft, carefully lowered bodily before Sir Vincent Harris's new Whitehall buildings were erected, was formerly a wine-cellar similar to that still existing at Hampton Court. Traces of the hall it served were found when the site was excavated between the wars. The palace of Whitehall, like Hampton Court, was a 'gift' from Wolsey to the King. At the same time the latter had embarked on another palace on the site of a recently dissolved hospital for leper maidens: St. James's. A large establishment, this palace had originally four courtyards, of which Colour and Friary Courts retain some Tudor work. The chief existing Tudor items are the familiar gatehouse, a typical production of its period, and the Chapel Royal ceiling of 1540, traditionally but doubtfully ascribed to Holbein. (Fig. 4.)

Our great Tudor palace is Hampton Court, which is too familiar to need any detailed description from me. It was, of course, Wolsey's to begin with and has that collegiate atmosphere we have been taught to associate with his buildings. The regularity of the design (executed moreover in brick, which had come into its own as a building material) is in marked contrast to what we know of the earlier palaces. Even when, e.g., the fenestration is irregular the whole is yet firmly framed by the long battlemented parapets with great horizontal string-courses to the storeys below.

The Wolsey interior was all tapestried splendour, but Henry enlivened the somewhat collegiate exterior with towers, particularly on the main west front where his great turreted wings seem to reach across the moat as if to grasp the visitor.

He rebuilt the great hall, with its noble roof by James Needham, on a grander scale and in a great hurry—so much so that the building accounts speak of the men working by candlelight and during what are described as their 'drinking-times'. It was doubtless due to this rush that some of the corbels at the foot of the wall-posts (those furthest from the dais) were found during repairs in 1926 to be made of plastered wood instead of stone. Henry also rebuilt the kitchens on a larger scale and these are largely intact, though it is at present possible to show only their best part to the public.

Another change was the alteration and enlargement of the royal apartments, in particular to make provision for his Queen and her household. Nearly all this work, save the Watching Chamber and its adjacent, highly typical two-storeyed galleries, was destroyed by Wren. Old pictures are not very helpful, but a general resemblance to Richmond or to Henry VII's tower at Windsor suggests itself. The chapel also was altered, to be altered again by Wren and finally once more given Tudor style windows by Queen Victoria in 1894.

One of the towers of Henry VIII's tilt-yard survive, but the rest were destroyed by William III when he turned the area into a vegetable garden.

Unfortunately of Nonsuch, Henry VIII's greatest building venture and one of the most important buildings of the day, only the site and a few re-used fragments survive.

After this great period of Tudor building the initiative in domestic building passed from the Crown to the mighty subject. In particular Queen Elizabeth did not see why she should do and pay for what her devoted ministers and nobles were prepared

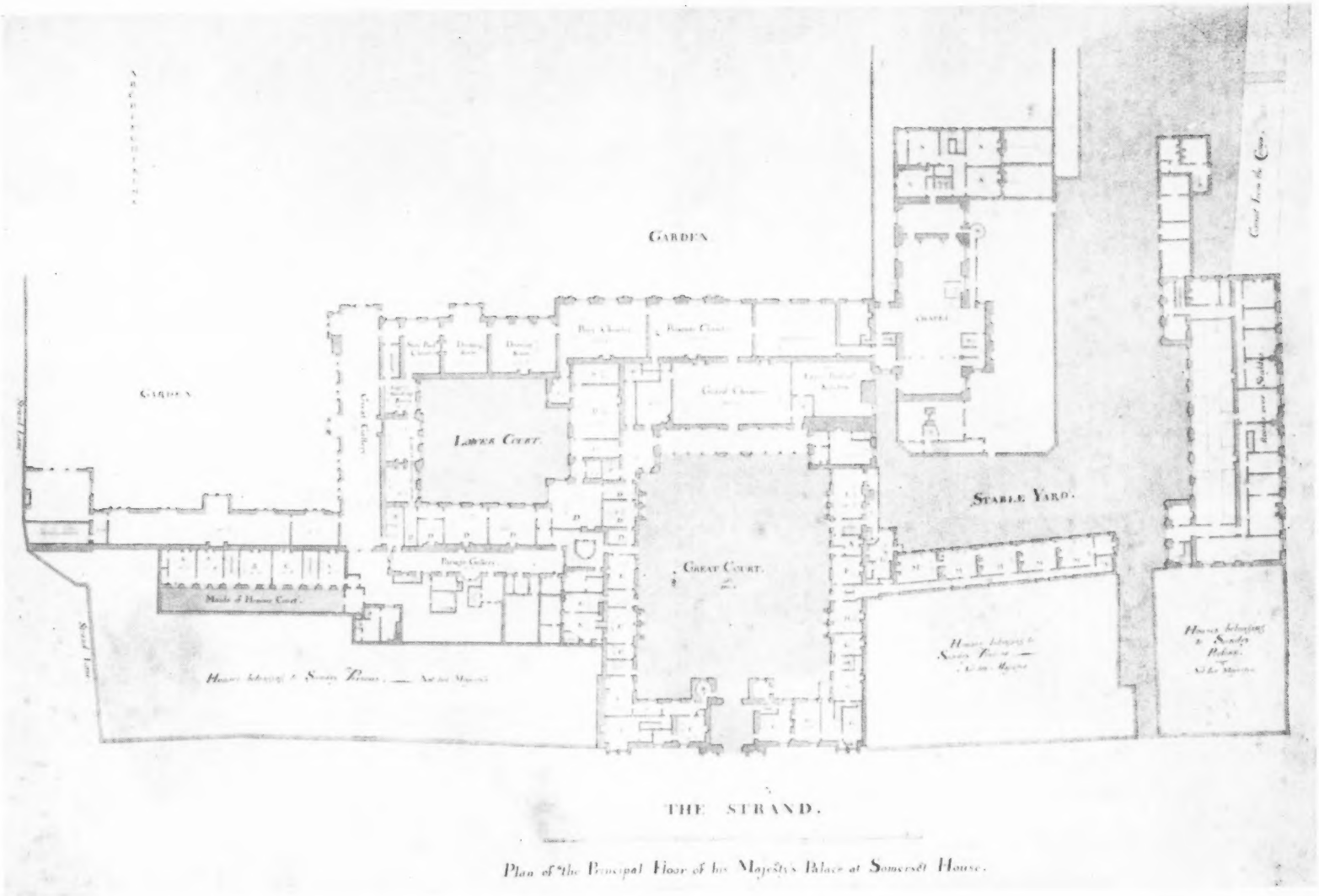

Fig. 5. The Strand: plan of the Principal Floor of His Majesty's Palace at Somerset House

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to do and pay for her. So she accepted their great houses and lavish hospitality in the same way as she accepted the musician's tribute: *The Triumphs of Gloriana*. At the palaces a few turrets at Hampton Court and a gallery at Windsor are practically all her reign now has to show.

I must ignore these great houses with one exception—this the work of an overmighty subject, the Protector Somerset, who shortly after Henry's death built his great private palace in the Strand. After his fall it passed to the Crown and later became regarded as the Queen's jointure until it was exchanged for Buckingham House in 1762. Somerset's house had a considerable influence on English architecture as an early attempt at a regular classical building. Something of the quality of its Strand front may be judged not only from the Thorpe drawing in the Soane Museum, but from a drawing recently acquired by the Ministry of Works and made for Sir William Chambers when the old palace was pulled down in 1775. (Fig. 5.)

The lead passed back to the Crown with the appointment in 1615 of Inigo Jones as Surveyor of the King's Works—though this, of course, didn't mean an abandonment of the 'Jacobean' style. His first important commission was a house at Greenwich for Anne of Denmark. Inspired by his knowledge of Roman and Italian architecture and learned in the writings of Palladio, he produced the first strictly classical building to be erected in England. It was not for this reason, however, that it was known as the 'curious devise', but because it was an ingenious solution of a problem in royal logistics: how the King and Queen could go from Greenwich palace to Greenwich Park without crossing the public road which separated the two properties. So the Queen's house was built on an H-shaped plan, with a two-storeyed leg on either side of the road, the cross-bar being a bridge at first floor level. When the building was restored by the Office of Works in the 'thirties the surface of the road (long ago superseded by the present Romney road) was found and has been left exposed to view.

The next in date of the two other royal buildings by Jones that survive is the Banqueting House, the only important building to escape the Whitehall fire of 1698. His first essay in the grand manner, this Palladian structure must have contrasted strangely with the medley of Tudor and Jacobean structures which constituted the rest of the palace. The splendid interior, a double cube of 110 ft. by 55 ft., ceiled by Rubens's vast painting of the apotheosis of James I, was intended for masques as well as for great state occasions. It is now the museum of the Royal United Service Institution. His other existing building takes us back to St. James's Palace: the Queen's Chapel, often wrongly referred to as Marlborough House Chapel. It was the first classical chapel in England and Jones's first ecclesiastical effort. Built as what contemporaries called a 'Popish' chapel, it was completed in 1627 for Henrietta Maria and was served by friars who lived close by and gave their name to the Friary Court of the Palace. Its plain but dignified interior heightens the restrained grandeur of the inside. Above the west end is the royal pew, formerly approached from the Queen's apartments by a gallery at first floor level. It has a large chimney-piece surmounted by an achievement of the Royal Arms. (Fig. 6.)

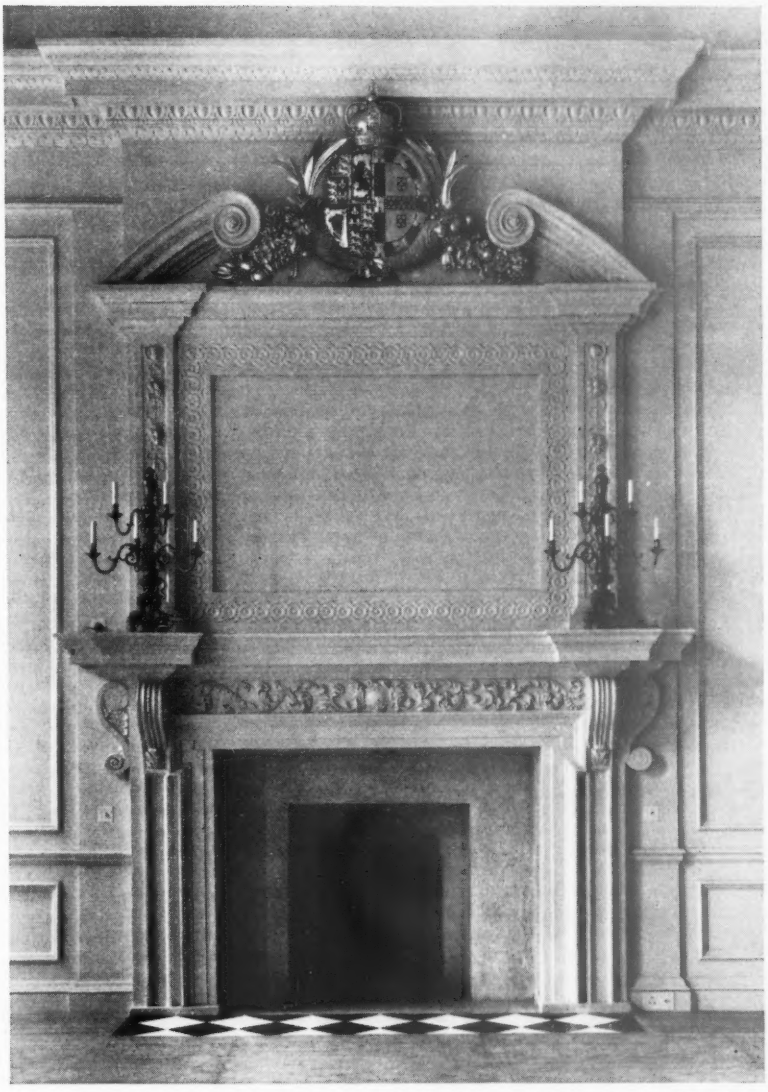

Fig. 6. St. James's Palace: chimney-piece in the royal pew of Queen's Chapel by Inigo Jones

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Of his much more elaborate chapel with an almost theatrical interior that he designed for the Queen's (i.e. Somerset) House, all that remains, in the basement of Chambers' building, is a few memorial slabs, including one to Henrietta Maria's cook.

During the Commonwealth many of the royal palaces were sold—some, in any case, must have been in pretty poor condition—and when the Restoration came their life was not renewed. So ended Clarendon, Feckenham, Geddington, etc., of the earlier palaces and, e.g., Eltham of the later. But Westminster, St. James's, Whitehall, the Tower and Windsor had remained in commission and Hampton Court had been specially exempted from the sale of the king's goods as a residence for the Protector himself.

The only important surviving work done at a royal palace early in the reign of King Charles II is that at Greenwich, where the buildings suffered so severely during the interregnum that they were pulled down except for the crypt. A grand baroque

palace, to designs by John Webb, was begun, but only what is now called the King Charles Block was completed. After 1698 this was incorporated in Greenwich Hospital and only the east elevation is now unaltered. At Somerset House a gallery, to a Jones design, was built for the Queen. Though destroyed with the rest in 1775 something of its appearance is preserved for us in the Strand front of Chambers' building. The other two important works of this decade were the Star Building and St. George's Hall at Windsor, both by Hugh May.

Though Wren did some work for King Charles II (his uncompleted palace at Winchester being the most interesting) his main commissions among the royal palaces were for William III and Queen Mary at Hampton Court and Kensington, though he also did some work at the others —except Windsor. He produced many schemes for Hampton Court, some of them grandiose and one at least involving the destruction of the entire Tudor palace except for the Great Hall. In the end the work, begun in 1689, destroyed only the private Tudor apartments and comprised the building of the east and south fronts and of Fountain Court. Any question of a more ambitious scheme ended with Queen Mary's death in 1694, and what was in hand hung fire, to be given fresh impetus (as at Kensington) after the fire of 1698 in Whitehall had robbed the king of one of his palaces, albeit one he didn't like.

This dislike of the Thames riverside, arising from his asthma, led King William eventually to what was then the healthier air of Kensington village, where he bought Nottingham House, a modest country mansion, from the earl of that name. This house was considerably enlarged by Wren, who rebuilt much of the main block and put large pavilions at each angle of it. The building remained a modest one, however, though it maintained the traditional suites of guardroom, presence chamber, withdrawing room and gallery for both King and Queen—an arrangement actually better preserved and on a more imposing scale at Hampton Court. Wren's work in Whitehall was largely destroyed in the fire of 1698, but some of its foundations were discovered when, just before the last war, the site was cleared in preparation for the government offices recently completed there.

Wren and his colleagues in the Office of Works also did work of some interest at St. James's Palace. The main staircase is by Wren or his colleagues (it was altered later by Kent) and there is fine Grinling Gibbons carving in the Throne Room; the state kitchen, an apartment of impressive loftiness, has a distinct air of Vanbrugh, and the colonnaded stable block on the north side of Stable Court, though altered, perpetuates a design by Nicholas Hawksmoor.

By this time King George I was on the throne, an event which coincides with the end of the Court School as such. After Wren was dismissed in 1718 from the post of Surveyor General, the Office of Works, as royal architects, never wholly recovered the pre-eminence in architecture which they had held for much of six or seven hundred years.

It may perhaps be convenient here to consider what palaces existed about this time—say 1720–30.

Westminster was given over to Parliament and the Law Courts; Whitehall was never rebuilt as a palace after 1698; the Tower was already little better than a state prison; Greenwich had been turned into a naval hospital. St. James's, Kensington, Hampton Court, the Queen's (Somerset) House, and, of course, Windsor, were what remained.

Of the London palaces of the period St. James's can, I suppose, be regarded as first in importance. It was there, e.g., that the principal state functions were held—a fact to be associated with the enlargement of the main staircase by William Kent. The most drastic changes, however, were made at Kensington, where the modest state rooms which had satisfied King William and Queen Anne were replaced by much grander apartments, a little later lavishly decorated by Kent. At Hampton Court in 1732 the latter also designed for King George II what is generally called the Cumberland suite—which occupies the east side of Clock Court. This work is of considerable interest for its Gothic manner, which is not limited to its exterior and the plaster-voluted vestibule to the Queen's staircase, but includes a large saloon with a 'Jacobean' ceiling with drop pendants. Kent also completed for King George I and for the then Prince and Princess of Wales the suites of rooms round Fountain Court which had been left unfinished by King William. In addition he redecorated the Queen's staircase round a vast picture by Henthorst (1628) depicting Charles I and Henrietta Maria receiving the Duke of Buckingham and the Muses; and he also redecorated the Queen's guardroom and presence chamber in a manner more remarkable for oddity than beauty.

The Hanoverian epoch also saw the emergence of the small country retreat as an annexe of royal life, the most interesting perhaps being Richmond Lodge, near which Queen Caroline built a number of exotic buildings including one known as Merlin's Cave.

King George III spent much of his childhood at Kew with his widowed mother and never lost his affection for the little group of houses there which for nearly a century constituted the homes of various members of the royal family. Hampton Court and Kensington he disliked for family reasons and on the death of King George II they ceased to be used by the sovereign. Except in his later years, when he built a vast Gothic extravaganza at Kew (designed by James Wyatt), King George III did relatively little building, but he took two courses of action which were to have a lasting effect on the history of the royal houses. He revived the use of Windsor as a royal residence (he kept his hounds there) and in 1762 he exchanged the existing Queen's dower house, Somerset House, for Buckingham House. These two decisions were given permanent effect by lavish building operations which occupied most of the reign of his successor, King George IV.

Buckingham House, a Dutch Palladian building of *c.* 1705, built for John Sheffield, Duke of Buckingham, and notable for its grand pillared staircase hall with paintings by Laguerre, was too small to be anything more than a private residence for King George III and his family, and state ceremonial still took place at St. James's. When King George IV succeeded he decided to make Buckingham House into his London palace and commanded the aged Nash not only to produce designs but to execute them. The work languished and was unfinished at the king's death. After much discussion and wringing of hands by Select Committees of the House of Commons (for the unfinished building had already cost vast sums of money) Edward Blore was given the awkward task of adapting the structure for King William IV and his Consort. Some idea of Nash's design can still be had from the garden front, where the two main storeys are his. The attic storey is by Blore, as is the central upstand which replaces Nash's dome, which was thought to be unsafe. On the opposite side of the building, i.e. on the east side, Nash's two-storeyed portico originally looked right down the Mall, but is now obscured by Queen Victoria's east wing of 1847, itself refaced by Aston Webb in 1913.

While he was waiting for Buckingham Palace to be finished, King William IV made a few restrained alterations to St. James's where he then lived. The chapel royal was altered at the west end, the 'Holbein' ceiling being extended westwards in the same colours and scale as the early work, but bearing the king's own badge. He also partly redecorated some of the state rooms.

The alterations made at Buckingham Palace by Queen Victoria on the advice of the Prince Consort cannot delay us further here, although I would remind you that some of the most interesting features of the palace are those brought from Brighton when the Pavilion there was sold shortly after the Queen had decided that her summer residence should be Osborne. (Fig. 7.) It is to the latter that I briefly direct your attention as a more perfect, indeed an untouched, example of its period than survives at the Palace.

Osborne, I realise, is not strictly a royal palace but a private residence—'private and retired'—as the Queen described it, built to the designs of the husband to whom she was so devoted. The Prince Consort, deeply interested as he was in the arts of painting, sculpture and music, and ever ready to mix with their exponents, seems never to have taken to architects—at least to English ones. Possibly their names—such as Smirke and Blore—deterred him, though he had a high regard for men like Cubitt and Paxton. It was Cubitt who put the Prince's

ideas for Osborne into practical form and also acted as contractor for the actual building.

The Prince, who was fond of finding resemblances, saw a likeness between the Solent as seen from Osborne and the Bay of Naples and designed, accordingly, an Italian villa with gardens to match, stepping down towards the sea.

In plan the house consisted of a private wing for the Queen and her family, consisting of state rooms on the ground floor, a sitting-room, bedrooms, etc., for the Prince and herself on the first floor, and nurseries on the floor above. The household occupied a separate wing joined to the private apartments by corridors on both floors. Provision was also made in the nearest part of the household wing for a Privy Council Chamber and an office for the Privy Purse. There had, in fact, still to be, even in this retired country resort, provision for the sovereign's business.

VOTE OF THANKS

The Vice-President: I would now like to call upon Sir James Mann to move a vote of thanks to the Speaker.

Sir James Mann, K.C.V.O.: I first met Mr. Charlton some 27 or 28 years ago, when he was engaged on the excavation of Clarendon Palace. At that time, the site of the palace was occupied by a wood on a little hill just outside Salisbury, and it was among the roots of that wood that Mr. Charlton found the foundations and a few valuable scraps of Henry III's palace.

Mr. Charlton is a member of one of the most ancient of our Government departments, going far back into the early Middle Ages, when the architects and masons were part of the King's Household, moving with the King from place to place.

Tonight Mr. Charlton has taken over this wide field both historically and geographically. It is a fascinating story; we have all listened to it enthralled and it gives me very much pleasure to move a vote of thanks to him for giving us the benefit of his learning, his scholarship and his eloquence.

The Vice-President: I will now call upon Sir John Summerson to second the vote of thanks.

Sir John Summerson, C.B.E., F.S.A. [*A*]: The story of the royal palaces is one which interests me very specially, because in the last ten years I have been engaged on a certain amount of research on the Government department which, through the ages, has been responsible for the erection and maintenance of these palaces, namely, the King's Works, the Queen's Works, the Office of Works or the Board of Works, according to the period one is dealing with. The history of that department is, I suppose, the strongest continuous thread in the history of English architecture. All the way from Henry VIII's warrior architect, Sir Richard Lee, to George III's model of incompetence, James Wyatt; perhaps I should not say he was incompetent, but that he lacked administrative ability; he could never keep an appointment, he could never answer a letter, and it got too much for bureaucracy. After 1813, I think it was, the Office was put in commission.

But the wonderful thing about that story is the way in which it is documented. The accounts, down to the last farthing, literally, from Elizabeth I to Elizabeth II, are absolutely complete. (At least, I surmise they are complete for the last 30 or 40 years; but I know they are complete during the reign of the first Elizabeth.) The whole story is a fascinating biographical study, in

Fig. 7. Osborne House: from the north-east (see also cover picture) *Crown copyright reserved*

which great names appear—such as Inigo Jones, Chambers, Wren and others. When great work is done and finished, they are 'otherwise engaged', although they keep one foot in Whitehall for the prestige gained and I suppose just in case anything should blow up. But it is not always the big names which are the most exciting, but some of the little names are also rather fascinating. For instance, I do not suppose the name of Thomas Graves has ever been mentioned in this room. He was the last surveyor but four before Inigo Jones, and he, oddly enough, built the first Banqueting House, on the site of the present building. There was another one, and then came the Jones' Banqueting House which Mr. Charlton talked of. This Thomas Graves, who had a very short reign as a surveyor, built the first Banqueting House and it consisted of timber structure with canvas stretched over it and on the canvas painted, according to Hollingsgate, a 'worke called rustike, much like to stone'. So in 1584 we have a curious prognostication of the rustication which was to arise more permanently in 1619.

What is so tantalising is the half knowledge, the quarter knowledge, which we have of these dimmer characters. All I think I can tell you about Thomas Graves is that he habitually wore a gold chain to the value of £100—about £2,000 in our money. The only other thing that was registered in the documents was that he died suddenly with his colleagues of the Works around him; they recorded his will for him, and that this happened just after the christening of his small son. Obviously behind that lies a very human and rather sad story; one wishes one had it all. He was the first man to introduce rustication to the royal building.

That is only a tiny detail of this vast story. I am telling it to you to give scale to the major story, the great sweep of events which Mr. Charlton has put before us. It is a wonderful story, with big people and little people in it—people struggling about in gold chains, and others not. Today, it still goes on; mostly without gold chains, but, chain or no chain, I think we should be very grateful to Mr. Charlton, who is what is described in those documents as 'one of the Officers of the Queen's Majesty's Works', for coming here and giving us this very striking picture of the history of his Department's achievement.

At the same time, I think we ought to remember how much we owe to the scholarship and the administrative care of Mr. Charlton and his colleagues for the continued preservation of our Royal heritage in building.

I have great pleasure, Mr. Vice-President, in seconding the vote of thanks to Mr. Charlton.

The Vice-President: If there should be any shortage of questions because of the speed and erudition of the talk to which we have listened, I hope Mr. Charlton will not hesitate to give us the rest of his lecture, which he seems to have felt under some severe discipline he must cut short.

Mr. E. J. Storry [*A*]: Mr. Charlton mentioned Geddington, I believe. I wonder if he could tell us something about that?

Mr. John Charlton: Geddington is one of the smaller palaces. It is of course not very far from the famous Eleanor of the Cross of that name. It was a small palace, probably with only a single courtyard and all we know of it is what we see in the various surveys, the post-mortem and parliamentary surveys, in which it is described as having a hall and the usual kind of appurtenances. The site still exists. It is a clear and unobstructed site, and I suppose an enterprising person might dig it with advantage, because the documentary evidence to which Sir John Summerson has referred is all there. As regards any details or any finds from the site that were really significant, I cannot say anything, except they are there presumably to be excavated.

I tended to keep Windsor in reserve because Windsor is a story in itself. With great difficulty one could compose the story of this remarkable building, the one which has been longest, I suppose, although in intervals, in royal occupation in this country. The story begins with William the Conqueror's great castle which closed the Thames gap and made secure that ring he established round London and the whole of the Lower Thames basin. It had under Henry III a fine series of buildings, of which a small survival is to be seen at the east end of St. George's Chapel, that splendid work begun by Edward IV. It was incorporated in the east end, and you see there some of the finest work of its period, about 1250. The chapel itself, now known (I was going to say 'I regret to say') as the Albert Memorial Chapel, was originally going to house the tomb of Henry VII; he eventually built the far more splendid building at the East End of Westminster Abbey. After his reign Edward III, the founder at Windsor of the Order of the Garter, where he was born and the place from which he took his name and used as the centre of his celebrations, moved the State apartments and private apartments, from the middle part near St. George's Chapel up to the site of the present State apartments.

The next great building period was that of Hugh May, which I referred to very briefly, when he erected for Charles II the Star Building, so-called because of the great Garter star which appeared on the outside. This reconstruction was, no doubt, due to the fact that Charles II, who was anxious to live at Windsor, with his past experience of the continental comfort he had seen—if not altogether enjoyed—could not find it in himself to live in a building which had not been substantially altered since the Battle of Poitiers. Therefore, he had Hugh May to do this splendid reconstruction, of which not a great deal survives, because of the operations during the life of George IV. But of the great ceilings done by Antonio Verrio, three do survive, and in some of the rooms you can still identify May's work by the cornices enriched with carving of Grinling Gibbons, which shows that they were part of Charles II's establishment.

Its last stage is that of George IV which, whatever one may think of its design, has a certain boldness about it. It has made a good deal of the castle rather phoney, but it has done one or two good things. When George III decided to go and live at Windsor, he lived in a kind of bachelor's quarters which is now the Royal Library, facing towards the Eton establishment for which he had such affection, and in great discomfort he established his wife and the rest of his family on the far side of the Upper Ward, where the Royal Apartments are now. That meant if he wished to call upon his family he had to walk across a courtyard in the rain. When George IV had it reconstructed, in order to make communication better, he established the Grand Corridor, a two-storey corridor, right round the building. This not only makes the question of moving from one part of Windsor to another a great deal easier, but it has provided a splendid gallery where some of the finest works of art in the great royal collection can be exhibited. At the same time, he did very much overcastellate, particularly the upper parts of Windsor Castle, but he had the wit at the same time to do what I suppose people dealing with ancient monuments today would hesitate to do: he raised the Round Tower, the central feature of Windsor, to double the height, so that this (after all, built upon the mound established by William the Conqueror) would still have its pre-eminence over the whole building, as it has today against the sky-line when the Royal Standard is flying; there is still this sense of history in the fact that the centre of the Castle is still pre-eminent over the rest.

Mr. W. Braxton Sinclair [*F*]: May I ask Mr. Charlton if he can tell us a little more about Richmond Palace by Henry VII, and if there is still existing a plan of it?

Mr. John Charlton: I wish there was a plan of it, because I am very anxious to find out about it. Many writers send letters saying they have got a plan of it, but the plan always turns out to be that of Richmond Lodge, or one of those country houses which I spoke of. But there is no adequate plan in existence, like the one I showed of Somerset House. One must rely on these various pictures. There is quite an adequate one in the collection of the Society of Antiquaries. There is a certain number of remains of the Palace. There is a gate house; if one prowls about the back streets of that part (it is now, I believe, full of highly desirable properties) you do find here and there traces of Tudor walls and the like. But there is practically nothing left of this great place. The gate house you see is not the one that one really associates with the Palace, and although you get places like the Wardrobe Building, they give you no idea of the very splendid structure, a kind of smallscale Nonsuch combined with the picture of Hampton Court that I showed you.

A Code of Procedure for Selective Tendering

Report of a meeting held at The R.I.B.A. on 16 November 1959, to launch and discuss the new publication of the Joint Consultative Committee of Architects, Quantity Surveyors and Builders: *A Code of Procedure for Selective Tendering*. The Chairman of the Committee, Mr. George Grosvenor, C.B.E., was in the chair.

OPENING THE MEETING, the **Chairman** said he regarded it as a unique occasion—it might well be historic—for it was the first time that the National Joint Consultative Committee, as a body, had met the public, and its sounding-board, the Press—both national and technical.

He recorded with pleasure the presence of the Presidents of two of the three constituent bodies of the Committee: Mr. J. L. Postlethwaite, President of the Royal Institute of Chartered Surveyors, and Mr. Tom Prosser, President of the National Federation of Building Trade Employers.

Also present were representatives of the ten Regional Consultative Committees, the Ministry of Works, the Ministry of Housing and Local Government and other Government Departments concerned with building work, Local Authority Associations, architectural schools and technical colleges, the Federation of Associations of Specialists and Sub-Contractors, the British Employers Confederation, the National Coal Board and other nationalised industries, the Building Research Station and the Institute of Architects.

The purpose of the meeting was to discuss the publication *A Code of Procedure for Selective Tendering*. The occasion might afford an opportunity better to understand the scope and aspirations of the J.C.C., whose work extended far beyond tendering procedure.

His colleagues and himself had been greatly encouraged by the reception and success of their earlier publication entitled *Plan Before You Build*. Some 80,000 copies of that document had been circulated among local authorities, Government Departments, nationalised industries, the building professions, contractors and, of course, private building owners; and their information was that this document was favourably received. They were still receiving requests for further copies, which was a healthy sign.

He recalled that the national J.C.C. had been set up in 1954 following the Report and recommendations of the Howard Robertson Committee which had recognised the need to set up some national machinery which would narrow the divergence of outlook between design and construction, increase mutual understanding and achieve closer collaboration, and so encourage a climate in which their work could flourish. He felt he could not do better than quote Recommendation XV of that Report:

> 'The establishment of a Joint Consultative Committee representing the R.I.B.A., the R.I.C.S. and the N.F.B.T.E. is strongly recommended to keep these and other problems under continuous review and before the public.'

As yet the national Joint Consultative Committee had no written constitution but its activities ranged widely over building matters. Being consultative, it could not but make small advances at any one time because it had three broadly divergent approaches to be accommodated on any one problem before it could unanimously and authoritatively recommend. As yet its findings were not mandatory but their hope was that a sustained and gradual build-up of recommendations founded on good practice would make for the closest integration of an enlightened team and increase their joint authority and effectiveness.

He would be very unwise to oversimplify but surely their horizon was that of higher efficiency within their own particular sector of the industry—which was another way of saying: build to ever higher standards of quality and quantity and at stable, if not diminishing, prices.

With that end in view the national J.C.C. was seeking to improve the two-way exchange of news, views, information and ideas between its regional counterparts and itself, realising that the more the Regions could help, the greater would be the progress made at national level. This exchange of views was not restricted to the Annual Conference of Chairmen and Secretaries—an event much appreciated and valued for its first-hand contacts.

It was not his function to detail the contents of the document before them, but he wished to refer to the national J.C.C.'s sponsorship of joint training schemes for members of the building team, and the setting up of the Joint Advisory Committee under the chairmanship of his colleague, Mr. Harvey Frost, of Bury St. Edmunds. That Committee had (1) established Junior Liaison Committees which were doing good work in bringing the younger architects, quantity surveyors and builders together to discuss common problems and (2) encouraged regional joint residential courses for all members of the team. Those courses were an outstanding success.

In this connection it might well be that the J.C.C. had the further responsibility of initiating a study which would promote a nationally organised system of post-graduate training. In the conditions ruling today, and likely to remain for many years, he regarded that as an inescapable 'must'.

Further, his Committee felt that some attention should be given to building up the procedure by which specialist sub-contractors were nominated to a building contract. The Sub-Committee charged with this job, which was presided over by Mr. William James, F.R.I.C.S., hoped shortly to publish certain standardised forms; and later a Code of Job Procedure might be published.

With all these considerations and many more in mind, the Code of Procedure for Selective Tendering had been produced. They would note that the Code aimed, by laying down clearly-defined procedures, to improve efficiency at the tendering stage in building contracts and so contribute to a reduction in building costs. At this stage he wished to record that such a Code was originally suggested by their colleagues on the London Consultative Committee; and they wished to record their sincere thanks to the Sub-Committee responsible for the Code in the form now produced. Its Chairman was Mr. M. H. Thackray. He and his colleague, Mr. Nigel Hannen, would agree, he felt sure, that much of their success was due to the skilful draftsmanship of Mr. George Whitby, whom they were delighted to see present.

Mr. M. H. Thackray, F.R.I.C.S., said disappointment had been expressed in several quarters that the publication contained nothing original. He felt it should be made clear, right at the outset of the meeting, that it was not the intention of the Joint Committee to propound any new theories or ideas. The main object was to pull together, if possible, in concise and easily digestible form, the tenets of good tendering practice already recognised and followed, they hoped, by the more enlightened members of the building team.

The remarkable thing disclosed in the preparation of the Code was the wide divergence of views held on certain aspects of tendering procedure.

The very existence of this divergence was in itself indicative of the need for some standardised procedure. The value of having obtained the agreement of all the constituent bodies was quite considerable, even though that had meant framing some of the recommendations rather broadly. For example, it had not been found possible to reach agreement on the actual stage when the priced Bills of Quantities should be deposited by the builder with the architect. On the one hand, certain local authorities and Government Departments insisted on the priced Bills being deposited, in separate sealed envelopes, with the tenders; and that practice found favour in several quarters. On the other hand, many builders considered this procedure to be

open to abuse and malpractice—so much so that some Regions of the Federation forbade members to submit Bills with tenders. The Code had, therefore, been framed to leave that point at large.

Thanks to the splendid spirit of co-operation that had existed during the prolonged negotiations, agreement was reached on practically all other matters; and it seemed to him that it was a great step forward to have laid down in such a document as that certain fundamental points which he would list:

(A) The practice of providing information for cover prices is deprecated.
(B) Acceptance of an invitation to tender is to bind the tenderer not to disclose his tender to any person or body before the time for receipt of tenders.
(C) Those inviting tenders should make it clear that to decline an offer to tender will in no way prejudice the chance of those invited to tender to have the opportunity of tendering for future work for the architect or building owner concerned.
(D) Any tenderer's errors in the priced bills do not affect the tender price.
(E) The generally accepted method for the adjustment of such errors.

He said a certain number of questions had been raised since the publication of the Code. The meeting might be interested in two queries raised by a chartered quantity surveyor from Northumberland. His first question was:

> 'Should not the corrected prices also be used for valuations during the progress of works for interim payments? If not, it is possible that if a large error were to remain unaltered a serious overpayment on valuation might result.'

He believed the questioner had found a theoretical loophole, for it was stated in the Code that the corrected prices should be used for the purpose only of valuing variations. The question really achieved a 'win' because corrected prices should also be used for interim certificate valuations; but they all knew that this was really only in relation to minor errors, because where there was a major error it was more than likely that the contractor would wish to withdraw his tender. Those present who were acquainted with the procedure would know that it was probably something of the order of a 0·4 per cent alteration; and whether or not it would be practicable or desirable to bring that into valuation was open to question. The wording should have been 'variations and re-valuation'.

The questioner's second query—and here again he was right—was:

> 'Does the adjustment mentioned in last para., page 8, item 14, apply to all variations to the contract or is it applicable only to variations of work contained in the bills of quantities? Where extra work is not of a similar nature or character or executed under similar conditions as the work contained in the bills of quantities, should the price of such work be excepted from any such adjustment?'

Any percentage reduction to be made in discussing such rates should have been added, in his view, before the discussion was started. Whilst accepting the validity of such queries as these he did not believe the Committee felt that they justified any alteration of the Code. Doubtless such points would be kept in mind for the day when the Code was re-published.

The J.C.C. had that very afternoon been considering taking that logical step forward and producing a Code of Job Procedure. Should that come to pass—if people could be found to do the hard work involved—the Code for Tendering Procedure would, of course, be incorporated in the Code of Job Procedure.

Mr. E. W. Varley, A.R.I.C.S., congratulated the Committee on having produced a document which, if not revolutionary, offered a standard which he believed all contractors and architects would adopt. He asked: 'Do the Committee consider it necessary, in the invitation to tender, to state the number of firms who were being asked to tender for the work? A month ago he had had the experience of a client insisting on inviting 19 tenders for the building of a warehouse. If invitations stated the number of tenders being invited contractors would know their chances and could judge whether their tenders were likely to be wasted.'

Mr. Thackray said that anyone who invited 19 tenders would not be following the Code at all.

Mr. Varley asked what could be done if the client insisted.

Mr. Thackray said he believed the client must be educated over a long period in the Code. He could not believe that any purpose would be served by revealing to tenderers the number of tenders to be considered, apart from the fact that perhaps if the 19 contractors had known they were tendering in competition they would all have sent the bills back—at least that was to be hoped.

Mr. H. Conolly, C.B.E. [*F*], suggested that the answer was to be found in the Howard Robertson Report in which the numbers were laid down in relation to tendering procedure.

The Chairman said the Committee on Tendering Procedure had dealt with the matter under Section 5, para. 42, under the heading 'Number of Tenders'. They had said:

> 'This will depend on the size and type of contract. We consider that the schedule ratio between the number of tenders and costs of work which the Ministry of Works use is satisfactory and might well be followed generally.'

The schedule was: For contracts below £500, 4 tenders; between £500 and £10,000, 6 tenders; between £10,000 and £50,000, 8 firms; between £50,000 and £200,000, 10 firms. Over £200,000, 12 firms. The Committee had concluded:

> 'A very large and important job may be restricted to a smaller number of firms known to be suitable for the particular type of work involved and thought to have available capacity at the particular time.'

He recalled that in a question put to him in the 'WHY?' programme of BUILDING NEWS was: 'Why were six firms prescribed?' He had suggested that builders were asked to tender far too often. That cost money. They should rely on the judgment of the professional adviser to the building owner to select builders who were known to have the competency and the capacity at the time, rather than broadcast. Builders present would know that to reply faithfully to invitations to tender cost a great deal of money. Possibly this was one of the causes of obtaining accommodation from other builders who were tendering. Builders would know that often it was quite impossible, even with a large staff of estimators, to deal faithfully and intelligently, and in the time allowed, with the number of tenders on one's desk.

Mr. Miles Hudson said he agreed with the ratio figures which had been quoted for tenders but what should one do when more than a reasonable number of firms asked to be allowed to tender? Often firms would be milling round wanting work in a particular district. He would like to see the numbers tendering reduced, as was suggested.

Mr. George Whitby, M.B.E. [*F*], said if 100 contractors were praying to quote for his job then he would make his selection of the six to twelve, or the appropriate number of firms, and ask only that number to quote; because he believed that by limiting tender costs one would cut the cost to the client—if not for that one particular job, then certainly over the country as a whole.

Sir Robert Lloyd wished to see rather more authority given to the published Code. It had appeared almost under a nom-de-plume, because the vast majority of those who would use it would never have heard of the J.C.C. He would like to have seen the Code published in the names of the Committee members, as was done with B.S.S. Codes, with a very strong recommendation from all bodies associated with it; because in the country one found 'pockets' of old-fashioned people who seldom came to London and who would say, 'We shall not bother with that. We shall carry on as we always have done.' To break through that façade he proposed the insertion of an interlay bearing the words:

> 'Issued by the authority of the R.I.B.A., the N.F.B.T.E. and the R.I.C.S.'

That would achieve closer connection with those not associated with the work in London.

Mr. Thackray said the point was an

excellent one. That had been an oversight on the part of the Committee.

Mr. I. E. Symonds, A.R.I.C.S., expressed disappointment that the Code did not deal with the question of submitting prices with quantities. He could see no valid objection to contractors submitting prices at the same date as quantities were submitted. He asked: What were the reasons for making no definite recommendation?

Mr. Whitby said it was a very thorny question which had delayed publication of the Code for perhaps twelve months. He reminded them that the R.I.B.A. form of contract on which the Code was based required the builder to submit priced bills of quantities at the time of signing the contract.

Speaking personally he saw no advantage in producing the bills of quantities before the contract was signed. In the Code they had recommended that the tender price was the price that went into the contract. Surely, that was the important thing. Provided they stated how any discrepancy in rates and bills was to be correlated to the tender price, they had done their job.

Mr. Symonds asked if it was not of interest to the contractor as well as the client that bills of quantities should be inspected by an impartial quantity surveyor beforehand?

Mr. Whitby said he believed they accepted that. It was stated in Paragraph 14 of the Code:

> 'The examination of the priced bills of quantities should be made by the Quantity Surveyor who should treat the document as strictly confidential;'

Also the Section stated how adjustment should be made.

Mr. Nigel Hannen said he believed builders definitely endorsed Mr. Whitby's view that there was no particular advantage in the submission of bills at the time of tendering. It had come out clearly, in the course of the discussions, that neither side had any firm arguments one way or the other; but there were the two particular points made by both sides: that there was a liability to abuse (and the arguments put forward cancelled each other out); and the fact that the builder's price is something which he regards as his own property and which he is not prepared to see 'monkeyed about with' until the tender has been considered and has been 'vetted' possibly by himself first.

Mr. D. Symonds, F.R.I.C.S., said in his experience more than once a contractor had made a serious error and asked to be excused, or permitted to withdraw his tender.

Mr. Whitby said errors were matters of degree. He was quite sure that any serious error in a tender would be recognised by an intelligent quantity surveyor or architect as soon as the tender was received. There was a right price range for a job and architects and quantity surveyors knew it. If tenders were sufficiently 'bunched' to suggest that all the prices were fair and subsequently a builder came forward and said: 'There has been an error; we should have gone up to about £10 below the next price above us', then suspicion would be aroused. If it was felt that the original tender was a fair one, and that the job could be done for that price, allowing a reasonable margin of profit, his own inclination would be to make the builder stick to his tender.

The Chairman said the point was fully dealt with in Section 14.

Mr. J. T. Castle [*F*] supported the two quantity surveyors who had spoken on the subject. He worked for a Council which, on the whole, had adopted selective tendering over the last four or five years. The situation would be hopeless if bills of quantities were not examined well before the contract-signing stage. Before they had adopted selective tendering they had had a job on which the lowest and second lowest tenderers having withdrawn the one who got the job was £14,000 above the lowest tender price. If all that had been held back to the contract-stage and then they had had to wait for the next tender, perhaps nine months would have passed. From the local authority point of view, unless they allowed people to check on the bills as early as possible, they would knock out selective tendering completely and the procedure would become hopeless.

Mr. Thackray said he had tried hard to keep out of that discussion because he held strong views on the subject; but for the document to go forward as an agreed one it became necessary to leave the point as to when bills were actually deposited, as a question at large. Otherwise the document could not have been produced. There was nothing in the document saying bills should not be called for immediately after the tenders had been received and the lowest tender was known; nor was there anything which said prices and bills of quantities should not be called for with tenders. The whole matter was left open. He could well understand such difficulties as had been mentioned. That was one reason why the document had taken so long in preparation.

He thought Mr. Whitby did not mean to say bills should not be called for until the contract was about to be signed.

Mr. Conolly said his experience as a local authority architect in Essex was that they called for bills about a quarter of an hour after tenders were opened. They did not expect them with the tenders, but they liked to have the quantity surveyor busy on them very shortly afterwards: and they always advised the quantity surveyor to keep the second-lowest tender in reserve. It sometimes happened that the first-, second- or third-lowest tenders contained serious errors. He would suggest to his colleague from Berkshire, Mr. Castle, that in proportion to the large volume of work he was doing the percentage of such cases was very small—perhaps one or two a year. About 95 per cent of their own tenders were genuine and contained no bad errors.

Mr. H. J. Rayner, F.R.I.C.S., said as a quantity surveyor, listening to the discussion, it occurred to him that all these difficulties arose from para. 5(*g*) of the Code, which stated:

> 'a provision that acceptance of an invitation to tender is to bind the tenderer not to disclose his tender to any person or body before the time for receipt of tenders'.

That meant that immediately tenders were opened the news went all round. He suggested that the wording should be altered to:

> 'when the lowest tender is accepted or withdrawn'.

There were expressions of sharp dissent.

Mr. James said the J.C.C. had issued a practice note deprecating the procedure of asking people to tender twice for the same job. That was quite specific in its terms. No reference to it had been included in the Code because it had already been dealt with earlier.

Mr. Hubert Bennett [*Honorary Treasurer*], said it would be very difficult for everyone to accept that practice note. There must be freedom of action and people inviting tenders must not be bound to go back to the same tenderers where it was found that the prices first submitted were quite outside the realms of what was known to be reasonable.

Mr. Whitby said the document was a Code; it did not claim to be a law. There had been other codes. He believed Mr. Bennett could properly violate even that new Code on very special occasions.

Mr. N. Irwin [*L*], speaking on para 7 (*b*), asked if some idea could be given of the 'general arrangement drawings' suggested.

Mr. Thackray recalled that some ten years ago it had been suggested to the Joint Committee on the Standard Method of Measurement that they might consider some simplification in the standard method. Contractors on the Committee had said: 'We might be prepared to consider some simplification, provided we have this kind of drawing, reproductive of a general arrangement drawing.' From that point it went to the J.C.C. and to the R.I.B.A. and he believed somebody had issued an edict that that was a good thing. That was the explanation for that particular clause. The three constituent bodies had decided it was a good thing to have those general arrangement drawings.

Mr. E. D. Jefferiss Mathews, A.R.I.C.S. [*F*], said the use of the term 'general arrangement drawings' had not been in

common use. He believed it was essential for a contractor, when tendering, to see the exact nature of the building for which he was tendering. Even more, he liked to send him, if possible, a photograph of a model, because there must be some variation in the cost according to the way in which a building was fitted together. That represented the basic competitive element that the contracting side could make—to assess how to fit a building together, and thus score over a competitor. He felt that a set of drawings should be sufficient to show competing contractors the real character and nature of the building for which they were tendering.

Mr. J. Nisbet, F.R.I.C.S., referring to para. 2 of the Code, said it contained probably one of its most important recommendations: 'in no circumstances shall the Builder's tendered price be altered'. If it should happen that an error was found in the lowest tender, the builder had only the alternatives of standing by his tender or withdrawing it. In certain instances a client might find this bearing hardly upon him, because correction of the error might still leave that tender substantially below the next lowest tender. It was hard to convince a client that it was in his own interest to ask that builder to withdraw; and he felt it would be interesting to hear from the Committee the reason for this strong recommendation being put forward.

Mr. Thackray said the Committee accepted the point that there would be difficulty in persuading people to accept that; but they were laying down the tenets of good practice. If people would not follow them then that was to be deplored. The Committee were looking at the broadest aspects, and over the whole field this was clearly the right course, because it meant, otherwise, that there would be the possibility of extreme abuse if it was accepted that there could be alterations in tenders. He was sure that in the long run this would prove to be the right answer; and he believed Mr. Nisbet would agree, even though he would have difficulty in getting his authority to adopt the recommendation.

Mr. Hannen said clearly there might be occasions when the client was difficult of persuasion on points other than that, but it seemed obvious that if a tender was very considerably below all the others then it was very unlikely that that was the proper price for the job; and if the client was to have a job carried out by a contractor who was capable of putting in a very low price and then failing to stand by it, or withdrawing it, in his view the client would get a bad job for his money—quite apart from the moral aspect of the matter.

Mr. Conolly said he had fought that particular item for a long time because he had been concerned over the point that was in Mr. Nisbet's mind—that where the client, department of a Ministry or local authority had a fixed price for a job in advance of the tenders and then all of them came in too high, one had to start taking things out. Where mistakes were suddenly found and the lowest tenderer was asked to withdraw and someone else was approached it meant turning out other things in the bills of quantities, and it was all very difficult. He believed that if the list of selected tenderers was drawn up with greater care, and there was not the tendency to broadcast invitations too widely, that kind of thing was less likely to happen. There were abuses where tender figures were permitted to be altered; but there were genuine mistakes as well as those 'mistakes' which were discovered when people had got to know the tenders. With regret, he had come to the conclusion that this course was the right one.

Mr. Whitby said while builders knew that errors might be corrected there would always be errors, because builders—like architects and quantity surveyors—were human. They might be so human that they would have 'errors' to cover every single thing. If they knew that their errors would not affect the contract sum he felt sure the number of errors would rapidly diminish.

Mr. E. J. Cook (L.M.B.A.), dealing with para. 7, said one of the biggest speculations at the tender stage concerned the degree of efficiency to be permitted to the successful builder. It was a matter of great speculation—almost a matter of selective tendering. Unless something was put in the document builders did not know whether or not the architect had been successful in his handling in the case of a difficult client who might wish to start the work prematurely; nor did they know whether the bills of quantities for each job, all nicely bound and most precise, in fact represented a design process that was complete or had barely been started. He would like to have seen a commitment from the profession on that.

Mr. Whitby said here they were speaking of human frailty. All clients were equally difficult but there were variations among architects and builders. The architects had the builders well summed-up and believed themselves capable of making a selection of firms to tender. He believed that builders were equally able to judge and categorise architects. There, from their own side, they could do just as well as the architects did from theirs.

Mr. W. C. C. Press, F.R.I.C.S., said the point was important. Emphasis had been placed on the loss suffered by the client when an error occurred in the lowest tender and the next lowest was selected. He felt it was rather hard on the lowest contractor because he believed the majority of such errors were quite natural ones, occurring in the stress of tendering. He had great faith in the general integrity of builders. He wondered if there might be some compromise between the two extreme alternatives of forcing the contractor to stand by his artificially low price or, in the case of genuine error, ignoring it completely. He advised his own authority that in cases where there was an error of consequence the lowest contractor should be informed in detail and given an opportunity of reconsidering whether he wished to retain his original tender, or adjust it. The contractor was told that other tenders had been examined and he would recognise that to the same degree that he had made errors, others might have done so in the reverse direction. That had been put into practice. There might well be other suggestions to avoid the dilemma of requiring withdrawal or retention of the original lowest price—a position which was unsatisfactory.

Mr. G. F. H. Waghorn, F.R.I.C.S., said the question had been discussed at the Eastern Federation Joint Board. In one case an eminent authority, used to building and with full knowledge of the subject, finding itself with a lowest tender containing a slight error (correction of which would have still kept it the lowest) refused the wish of the architect and the lowest tenderer to withdraw that tender. That error had been a bona fide one, and they had not been prepared to accept anything else. The matter had been left open for general discussion.

He remembered finding a substantial tender which had a bona fide error in the actual price. The tender was the lowest. The error was pointed out to the client, a charitable organisation, and they recommended that it was unsound in principle to take any advantage of a bona fide error. While he entirely agreed that amendment of tenders should not be allowed it was a problem not easily tackled and it needed further consideration. There should be some guidance on how to deal with such, admittedly rare, cases.

The Chairman inquired whether in that case rectification of the error would have increased or decreased the price.

Mr. Waghorn said the adjustment would have increased the price to a figure still adequately below the next lowest tender. In the second case it produced a figure some £200 to £300 below the next lowest tender.

Mr. L. J. Holloway said he believed builders themselves required this to be applied as rigidly as possible. They had been hearing some aspersions on the integrity of the contracting side of the industry. He firmly believed that it was the industrial side of the panel who wanted this matter corrected and put in clear terms. He believed he was right in saying that a tender was a legal offer under mercantile law, and that a tender, in a sum of money, was open for acceptance until it was either accepted or withdrawn. In the building industry they had the process by which a bill of quantities was used as machinery to produce a tender price; and in normal circumstances when a tender had been opened the lowest tenderer was invited to send his bills for examination by the quantity

surveyor. If a serious error were found—and no one had suggested that when an error in favour of the builders was found nothing should be done about it—the quantity surveyor (he believed, quite correctly) acting as an impartial figure between the architect and his client, the builder, would draw the contractor's attention to the fact that he had made a serious error; and he was given the right to withdraw the tender or stick to his figure. If the tender was withdrawn it ceased to be a legal offer and the next lowest was the tender legally to be considered. Some people believed that instead of the lowest price being taken the third from the lowest should be regarded as far more likely to be the right price in terms of value for money.

Mr. L. D. Wall [*A*] said the advice to be given to his council would be that the Code, as printed, should not be taken up. That course was not being lightly taken but it was felt that such a recommendation should be made. Apart from some minor points with which he would not deal, they felt, as local authority architects, that they were serving the community at large—the rate-payers—and that where a lowest tender had an obvious mistake, possibly an arithmetical error (and it was that kind of error only that he had in mind), it would be quite wrong for them to advise withdrawal of the tender. That would not be a good thing when the next lowest tender might be £4,000, £5,000 or £6,000 higher. Why should the rate-payers be asked to bear that extra cost purely on a question of rigid principle? He felt it would be wrong from everyone's viewpoint.

There was a further aspect: obviously where one had a contract on which the contractor had been asked to stick to a figure involving him in a loss, perhaps of some thousands of pounds, that contractor, from the word 'go', would be trying by some means to 'find' that amount of money.

Mr. Bradshaw said the crux of the matter lay in the fact that some people were suggesting that the lowest tenderer, in certain cases, might be submitting not one tender but two. He believed the principle of taking advantage of a lower tender containing an error was wrong in principle and could in no circumstances be excused. If, when tenders were opened, it was found that the lowest contained an error and that that tenderer was not prepared to stand by his original price, there could be no moral or other reason for not accepting the price offered by the next lowest tenderer who was prepared to stand by his figure.

Mr. J. E. Symonds said it could be argued that in submitting a tender a builder acted on the basis of an arithmetically correct bill of quantities. If an error was found such as would reduce the figure it was difficult to convince the client that the builder should not be asked to come down in his price. It could be argued that when he submits his tender the builder is quite happy about the price and that if errors should lead to an increase he ought to be asked to stand by that. The person who had not been consulted was the building owner.

Mr. Rayner said his experience nationally was that if one followed the Code 90 per cent of the troubles would disappear and one did not have all these objections. He had been responsible for a national programme in which they were getting in 40 or 50 tenders a year over a long period, and he had had to get tenders in Scotland. He had considered the London code of measurement to be as good as any. He was told he would never get tenders in Scotland on the London method and that it would be necessary to follow the Scottish code of measurement and contract very closely—even to the extent of getting in bills of quantities, getting the tenders, correcting the errors and awarding the contract to whoever was lowest when all errors were corrected. They had, in England, a method which more or less followed this present Code, the Scottish method conforming to their own Code. The bills came straight from the office boys and were not checked. They had therefore insisted on conformity with the English code and from then on all the troubles experienced had disappeared. Over the years he had had no trouble of that kind so long as the contractors were disciplined. There was some evidence to show that when they knew they could rely on the quantity surveyor to 'vet' the bills and correct the errors, they did not bother much. A further improvement had been very helpful 15 or 20 years ago. He had introduced the Scottish method of getting the quantities and prices side by side, further diminishing errors, perhaps tenfold.

Mr. Williams (L.M.B.A.) said the subject could be viewed from another aspect—on small contracts quantities did not form part of the contract and were not submitted; and the tender was taken as a bid. In the ordinary job, where the tender formed part of the contract, they were there for Clause 9 of the contract and it was a lump-sum bid; and for that purpose no bills of quantities should be submitted with the tender. The tender should be considered on its merits. If, when the quantities were examined by the quantity surveyors, a patent error should be found, then—he agreed—the contractor should have an opportunity to stick to his price or to withdraw. But it must be recognised that bills of quantities were there, not for the use of the architect but solely for the use of the quantity surveyor, to adjust and measure variation. The method of adjustment was stated in Clause 14. He wished to know how the Committee had come to that conclusion, having in mind that an error in casting might be an amount of £10,000, £1,000 or £100. That was not an error in pricing bills. He failed to see why, if a builder had presented an item at 7*d.* per ft. run, he should have it priced at 7*d.* per ft. run just because he had made that error in casting and was, in fact, prepared to stand by his bid.

Mr. Whitby, summarising the discussion at the invitation of the Chairman, said the questions which they had been discussing had already been thrashed out at great length. He asked the meeting to note particularly that it was the builders that were asking the Committee to stand by the relevant clause.

He asked Mr. Wall particularly to consider this aspect, for if he could get his Committee to accept tenders without delay there would not be errors in them for very long. Mr. Holloway was absolutely right in that each was an offer which could be accepted or rejected with or without checking the bills; but if an error were found it should not alter the tender price. Nothing that had been said at the meeting had convinced him that it was in the general interest to alter that price, up or down. If discipline was accepted (and it was for the building industry and its clients to accept or reject) that was the most that could be done.

They, the J.C.C., must try to set a standard. Builders could be careful and accurate and, while they could make mistakes, they were all of them men of honour and he felt sure they would be willing to stand by their offers.

Mr. Conolly suggested that one of the reasons why errors crept in was that often tenderers were not allowed sufficient time in which to prepare their tenders. If people favouring the Code would agree to give tenders more time, if they would give notice of their intention to ask for tenders, so that builders and their estimating staff were prepared, he believed the possibility of serious errors would diminish very considerably.

Mr. Whitby, dealing with Mr. Williams's query as to why an error in one item should affect all the smaller ones, said he bowed to his quantity surveyor colleagues who had insisted—and he believed, rightly—that when the final bill, the bill upon which variations were to be priced was agreed, that final bill should tally with the tender price. If any discrepancy were allowed the difference between the total of the bill and the tender price might be considerable; the cost of variations would be disproportionate.

Mr. Holloway said as Chairman of the London Region J.C.C. he thanked Mr. Whitby for his kind remarks on that point. The document had come from his Committee and they were very proud that it had been adopted. He wished to make one urgent plea: there had been a great deal of criticism of specific clauses of the document but a great deal of it had received no mention. He pleaded that the document should be implemented to the fullest possible extent. If one local authority wanted to handle their tenders in a particular way, then by all means let them do so; but let the Code be accepted on all those things

which were so important to them all—particularly Clause 5, the way in which invitations to tender should be sent out; Clause 7, the tender documents; and Clause 8, the form of tender.

All those things were good tools of management to be used, and the more they were used the more efficient master builders could become. But just because one disagreed with a particular clause was no reason to throw the whole Code overboard as being of no value. If there was only a single clause in the document which they accepted, let that be implemented, for that would bring them at least one step nearer to building perfection.

The Chairman said the Code was not mandatory but represented the unanimous view of the three parties—architects, quantity surveyors and builders. The members of the Committee felt that those who accepted the challenge and prided themselves on their efficiency would be well advised to study and apply the recommendations contained in the Code. There would always be the Devil who would make his own translation of Holy Writ.

Mr. Hubert Bennett said the L.C.C. were at present running almost parallel with the Code. Going through it very carefully, they had picked out 12 small points where, by small variations in practice, they could bring themselves even further into conformity with the Code. There should be no difficulty there and he was sure that as their documents were reprinted they would be able to do that.

Mr. W. L. Forsyth, referring to Clause 7, asked for an assurance that there would be compliance with the recommendation that two copies of bills of quantities should be sent, with a reproduction of the general arrangement drawings and two copies of forms of tender. In his experience that rarely happened. One bill of quantities had to be split up locally. Very often there were no drawings; and only a few authorities and private architects ever supplied two copies of the tender forms. Builders would be grateful for an assurance that that would be done.

The Chairman said obviously such an assurance could not be sought or given at that meeting. It was the unanimous view of three representative people, who had sat together for a long time, that that course should be followed. Nobody realised better than the Committee the great gulf between precept, as laid down in the Code, and general practice. They were showing the way. It was for others to grasp this, and to implement the recommendations.

His own view of Joint Consultative Committees, whether national, regional or local, was that they had a long job on hand to get people as enlightened as those who had contributed to the document.

Mr. Whitby said he wished to stress how much those in the architectural profession looked to the J.C.C. It was an amazing fact that this was the first and only national body without restricted terms of reference in the second largest industry in the country; and this was the first document of any size it had produced. They were laying down precepts. Architects, he believed, would accept them wholeheartedly and they hoped that the J.C.C. would go from strength to strength. He wished to say how greatly they had appreciated all that had been done by the Chairman and Mr. Thackray and his Committee and, on behalf of architects and others, he thanked Mr. Philip Flitton, Mr. David Waterhouse and the staff of the Institute who had always done so much to help, and Mrs. Murray of his own staff who typed out the document as it developed more times than she could remember.

Mr. Jefferiss Mathews, on behalf of the meeting, thanked the members of the Committee for their work and expressed appreciation of the crisp handling of the meeting by the Chairman. His bubbling enthusiasm was a good substitute for the bottle which normally featured in a launching.

Practice Notes

Edited by Charles Woodward [*A*]

IN PARLIAMENT. Building and Civil Engineering Works (Contracts). Asked his Department's policy when placing Government contracts for building and civil engineering works; to what extent all such contracts are subject to open competitive tendering and acceptance of the lowest price; what is the number of contracts placed without competition in relation to the total undertaken for the period 1955, 1956, 1957 and 1958, and up to the latest convenient date in the current year; and the proportion, expressed as a percentage, of contracts placed without competitive tendering for the period 1955 to the latest date, the Minister of Works replied: The Department's policy is to place contracts for building and civil engineering works at a fixed price with the lowest bidder after competitive tendering by approved contractors. Only in the most exceptional circumstances are contracts placed without competition or to anyone but the lowest tenderer. The number of contracts from the beginning of 1955 to date is 40,486. To give a figure for the exceptional cases when the contract has been placed without competition or the lowest tenderer has been passed over would make heavy calls on staff time in examining all the 40,000 files, but the proportion of exceptional cases is almost certainly less than 1 per cent. (1 December 1959.)

MINISTRY OF HOUSING AND LOCAL GOVERNMENT. More Powers for District Councils. Wider delegation of planning functions. Regulations entitling county district councils with a population of 60,000 or more to claim delegation from county councils of important planning functions have been made by the Minister of Housing and Local Government, Mr. Henry Brooke. They came into operation on 1 December.

If the Minister thinks fit he will be able in special circumstances to require similar delegation to a district council with less than 60,000 population.

The principal functions subject to delegation concern applications for planning permission, orders for preserving trees, and the control of outdoor advertising. Mineral development is excluded, but county councils have power to delegate the control of this too if they want to.

As far as the other district councils are concerned, the Minister, in a circular, calls on county councils to review their arrangements for planning control. In some counties, he says, it may be generally agreed that the existing arrangements are satisfactory, but in others it may now be right to consider introducing a delegation scheme, or extending existing delegation arrangements.

He believes that 'the satisfactory exercise of planning powers in the counties demands a partnership between the county and district councils which can best be achieved by the fullest measure of delegation to the district councils coupled with a willingness on the part of the district councils to maintain close consultation with the county council'.

The Minister thinks that 'in general, any district council to which adequate technical advice is available should be left free to decide most applications for development which is in accordance with the development plan, though in any case of doubt the district council should consult the county council. He hopes that one result of the review of the existing arrangements will be to ensure the speedy handling of straightforward planning applications, and, where difficulties are foreseen, to make it more frequently possible for a discussion to be arranged with an applicant.'

Mr. Brooke also suggests that county councils should give district councils which have the necessary staff the fullest opportunity of co-operating in the preparation and review of town maps.

(Town and Country Planning (Delegation) Regulations, 1959. S.I. No. 1915, H.M. Stationery Office. Price 3*d.* net.)

(The Regulations do not apply to the metropolitan area as defined in the Fifth Schedule to the Local Government Act, 1958. In the County of London delegation is governed by separate provisions.)

Unjamming Central London. The Minister of Housing and Local Government is determined to bring to an end the concentration of all new office employment in Central London. He said this when opening a new office block at Kew Bridge, and added: 'This new office building is significant of the future. Those who are responsible for the initiative deserve the credit; and I hope their example will be followed by many, to the lasting well-being of London and Londoners, and the jammed roads which we want to un-jam.' The Minister said he hoped that the new office block would give impetus to a trend with far-reaching consequences.

'We do not want to see all the new office buildings erected in Central London,' he said. 'We want them more and more to spring up on the outskirts of London, or away beyond the green belt in the New Towns and elsewhere.'

LAW CASES

Henry Boot and Sons, Limited, *v.* London County Council. Rates of Wages. 'Rise and Fall' clause. Holiday money. In 1952 and 1953, the plaintiffs, building contractors, entered into contracts with the defendant council to erect blocks of flats. The contracts were in the standard form issued by the defendants, which contained a 'rise and fall' clause (cl. 23A), providing that if, during the currency of a contract, 'the rates of wages payable for any labour employed in the execution of the works' should in conformity with agreements between associations of employers and trade unions, or with the decisions of a competent authority be increased above or decreased below the corresponding rates in force at the date of the contractor's tender, increasing or decreasing the cost to the contractor in carrying out the works, then an allowance equivalent to the net increase or decrease should form an addition to or deduction from the amount otherwise payable to the contractor. The plaintiffs were parties to schemes arranged by the building trade under which they, as employers, made weekly payments by way of credits for providing holidays with pay for the workmen. During the currency of the contracts increases were made in the payments or credits and the plaintiffs contended that these holiday payments or credits fell within the words in the 'rise or fall' clause—'rates of wages payable'. The council rejected the plaintiffs' claim and Pilcher, J., to whom the dispute was referred as an agreed special case, decided in the council's favour. The plaintiffs appealed successfully to the Court of Appeal. The defendants now appealed to the House of Lords.

Viscount Simonds said that the question was whether the holiday credits were rates of wages within cl. 23A of the contract. The Court of Appeal had held that they were, but the decision of Pilcher, J., was preferable. What the workman got from the operation of the holidays agreements was a benefit to him; but it was an essential element of a 'wage' that it should be paid to him for work done by him, and that element was lacking in the holiday credit. It was neither paid by the employer nor related to the work which the workman did for him. Further, to come within cl. 23A the payment must satisfy the compound expression 'rates of wages'. It did not follow from the plural form that whatever was paid to or for the benefit of the workman beyond his ordinary wages was also a wage. It would be even harder to describe contributions of varying amounts to a management company in accordance with a holiday scheme as different rates of wages. The appeal should be allowed. (THE SOLICITORS' JOURNAL, 20 November 1959.)

Technical Column

Course of lectures on fire protection

The first course of lectures on Fire Protection to be designed for practising architects will be held at the R.I.B.A. on Wednesday 27 January 1960. The course is sponsored by the Institute in conjunction with the Fire Protection Association and the provisional programme is as follows:

10 a.m. The effects of fire in buildings:
Eric L. Bird, M.B.E., M.C. [*A*].
Some notable fires and the lessons to be drawn from them, showing how attention to fire protection in building construction can control the spread of fire and the resulting damage.

11 a.m. The principles of structural fire protection:
L. A. Ashton, B.Sc.(Eng.)
The theory of fire resistance and structural fire protection—how research can affect building practice and legislation—the British Standard Fire Tests and how they are applied.

12 a.m. Break for Lunch

2 p.m. The fighting of fires in buildings:
E. A. Hibbett
The problems of fire fighting—the control of the spread of fire and smoke by fire separation and the importance of this and other structural features in helping firemen to extinguish the fire and limit the damage—means of access for appliances outside and for firemen within a building—fixed and first-aid fire fighting equipment in buildings.

3 p.m. Means of escape from fire in buildings:
S. D. Studd, F.I.A.S.
Means of escape and the local authorities' responsibilities—the location of buildings and the characteristics of occupancies—the fire resistance of structural elements and the flammability of contents—escape planning and the construction of means of escape.

4 p.m. Tea

4.30 p.m. Discussion. The speakers and other experts will be present.

Tickets for the course, price £1 10*s*., are available from Mr. Anthony Williams, Assistant Secretary, R.I.B.A.

Conference on Plastics in Industry

The six papers read at this conference, which was held at the R.I.B.A. on 19 and 20 November 1959, together with the discussions, will be published in February in a special Conference issue of the TRANSACTIONS AND JOURNAL of the Plastics Institute, who organised the conference. Copies will be obtainable, price 15*s*. each, from the Secretary, The Plastics Institute, 6 Mandeville Place, London, W.1.

Technical Information Service.

One of the reasons for proposing an Institute technical information service is that there must be a wealth of experience within the profession which if properly disseminated would be of value to others. At the present time there is no staff to collate information but we have recently received a note from the L.C.C. on their work on furniture for study bedrooms. Is this the sort of information you would like to see in the 'Information Service'? In this instance the note and accompanying drawing are reproduced in full.

Halls of Residence, Furniture for Study Bedrooms

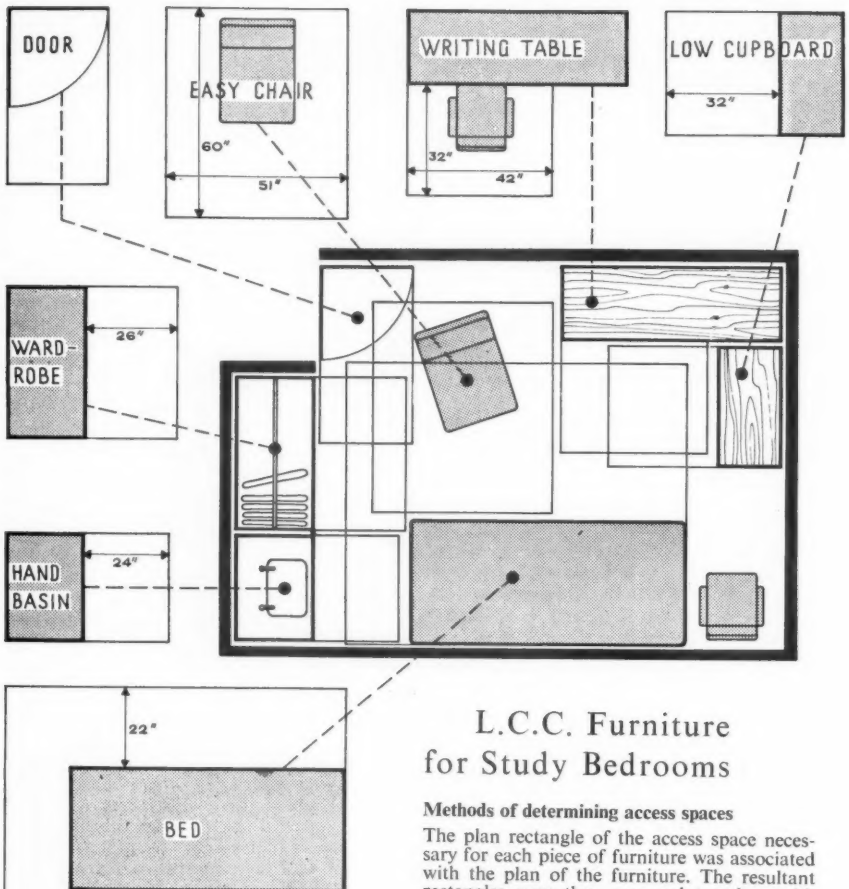
THE L.C.C. has begun a large and continuing programme of expansion for further education, part of which consists of the provision in training colleges, polytechnics and colleges of advanced technology of halls of residence in which each student will be provided with a separate study-bedroom. More than 1,500 of these study-bedrooms are to be provided during the next 3–4 years.

The furniture for these rooms has been specially designed by the Furniture and Display section of the Architect's department in association with the Education Officer and the Chief Officer of Supplies. This has been done for several reasons. First, the rooms had to be furnished for use by men and women mostly aged 18 or over who have reached a considerable degree of personal independence and who will be studying widely varying subjects. Secondly, the halls of residence will vary according to their sites, the requirements of each college, the proximity of that college, and the ideas of the job architect. Finally, the cost limits on the project virtually lay down a maximum floor area of 140 sq. ft. per room and a maximum furnishing cost of £100 per room, £25 of which should be devoted to built in-fittings.

At the outset it was evident that it was neither reasonable nor desirable to establish a fixed room design with a large proportion of built-in furniture, and it was decided to design a standard group of free-standing furniture, suitable for rooms of different proportions, which would allow students to vary the arrangements of their rooms. The wardrobe and wash-basin only would be built in, and the standard furniture, being quantity produced, would be reasonable in cost.

The problem was tackled, first by obtaining a general picture of the furniture requirements. Existing training colleges, both in- and out-country, were visited and questionnaires were circulated to find out what clothing and other personal belongings were kept in their rooms by students. This information, supplemented by other

(*continued on page 97*)

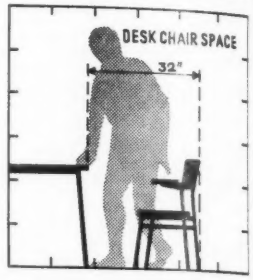


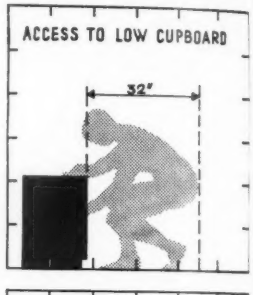
L.C.C. Furniture for Study Bedrooms

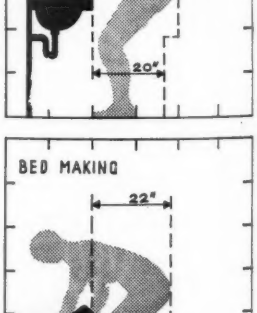
Methods of determining access spaces

The plan rectangle of the access space necessary for each piece of furniture was associated with the plan of the furniture. The resultant rectangles were then arranged together, with permissible overlapping of access spaces to establish room proportions, arrangements and alternative arrangements of furniture within the room.

A number of adults of both sexes and varying stature were observed carrying out each operation. The maximum projection in each case was recorded with the aid of a projector throwing a shadow on to a screen which had been marked out with a corrected scale. Where there was a significant difference above and below a horizontal line 22 in. from the floor both dimensions were recorded. Readings were then plotted and the line drawn to include a majority of the readings.







published material and anthropometric data, was valuable in enabling the Architect and Education Officer to reach decisions on the type and size of fittings and storage that would be adequate for the majority of students. Investigations were then made into the amount of additional clear floor area needed for each piece of furniture to allow for access or the carrying out of operations associated with it; including, for example, the space necessary for making a bed. With the aid of diagrams, models, full size mock-ups and, finally, complete prototype rooms, various alternative layouts were prepared to discover the best arrangements and room proportions within the allowable area. The information obtained was then distributed to the job architects for their guidance when designing the buildings. These layouts and designs have now been approved by the Governors of all the colleges concerned and by the Council.

Design Team:

Hubert Bennett [*F*], Architect to the Council. F. G. West [*F*], Deputy Architect to the Council. D. C. H. Jenkin, B.A.(Arch.), A.M.T.P.I. [*F*], Senior Architect, General Division. P. E. Jones [*A*], Assistant Architect, General Division. Frank Height, Des.R.C.A., A.M.I.Mech.E., M.S.I.A. Douglas A. Webb, M.S.I.A. and Robert Riden, M.S.I.A., Furniture and Display Section.

ANTHONY WILLIAMS [*A*]

More new commissions for private architects

Results of the survey for the third quarter of 1959

NEW WORK commissioned of private architects in the third quarter of 1959 increased by more than half as much again over the level in the corresponding quarter of 1958, and rose slightly above the level in the second quarter of 1959. This increase over the second quarter came largely in private housing and miscellaneous buildings for public authorities.

This information has been derived from a quarterly survey of a sample of all private architectural practices run by members of the R.I.B.A. For further details about this sample survey see the October issue of the JOURNAL (page 416).

Table 1 above gives the results for the third quarter of 1959 compared with previous quarters back to the beginning of 1958, when the inquiry started. The series is an attempt to measure a trend in demand —to assess the extent of the clients' intentions to build. But as the series has not been long established the results obtained must be used with caution. For 1958 there was the suggestion of a seasonal pattern in the flow of new work, with a first quarter peak decreasing to a third quarter trough. However, for 1959 the third quarter has shown a slight increase in the value of new work over the previous quarter.

There have been so many external factors to influence the demand for new buildings this year—the 1958 relaxation of credit restrictions and lowering the bank rate which has given the impetus to new private housing; the modest encouragement given to local authority building provided it could be started quickly. Against this, there were the uncertainties of the pre-election period which may be relevant to the less marked change in industrial and commercial building for private clients. It is therefore not surprising that if there is a 'normal' seasonal pattern, it has been broken this year.

Table 2 analyses new work for which private architects were appointed by type of building.

All types of new commissions in the third quarter of 1959, except for the category 'offices and banks', showed an increase over the corresponding quarter last year. In some cases—those of new private housing; education; and other buildings owned by public authorities—the level of new commissions was double or more than double that for the third quarter of 1958.

Table 1. Estimated value of new work for which private architects were appointed

Period	1958 £ million	Change over previous quarter %	1959 £ million	Change over previous quarter %	Change over same quarter of 1958 %
First quarter	280	..	267	+41	−5
Second quarter	226	−19	222	−17	−2
Third quarter	141	−38	225	+1	+60
Fourth quarter	190	+35			

Table 2. New commissions for private architects analysed by type of building

£ million

TYPE OF BUILDING	1958				1959		
	First quarter	Second quarter	Third quarter	Fourth quarter	First quarter	Second quarter	Third quarter
New housing							
For public authorities	27	17	10	21	17	28	13
For private developers	55	39	26	49	77	57	68
Total, New housing	82	56	36	70	94	85	81
*Other new buildings**							
Private industrial building	45	48	21	24	46	32	30
Offices and banks	45	28	35	24	21	14	15
Other commercial and miscellaneous buildings for private clients	41	52	26	40	63	37	41
Educational (public and private)	40	31	12	19	26	34	23
Other buildings for public authorities	27	11	11	13	17	20	35
Total, New buildings	280	226	141	190	267	222	225
For public authorities	84	49	28	44	53	65	61
For private developers	196	177	113	146	214	157	164

* The classifications used for 'other new work' have been altered since the previous article to give separate figures for building types for private clients. 'Educational' buildings only are now shown as a total for public and private clients, since much of the financing of these buildings is shared between the two.

Correspondence

The Editor, R.I.B.A. Journal

THE INFLUENCE OF PLASTICS IN BUILDING

Dear Sir,—As a lecturer and practising architect who attended the recent two-day conference on 'The Influence of Plastics in Building', I consider it my duty to give my own observations on the contribution made by the conference to both architecture and the plastics industry.

If the conference was intended to illustrate the close liaison between designer and manufacturer, then it must be considered to have been a failure, since there appears to be little or none in this country. If the conference was intended to illustrate the intention of the majority of the plastics industry to encourage design developments, or the profession to acknowledge the challenge of 'new' materials, then it must equally be considered to have been a failure.

On trying to analyse my reactions to both the papers and the discussions (the latter far too restricted in time), I have jotted down the following conclusions and would appreciate the views of others:

1. Faults lie on both the side of the industry and the professions (architecture and engineering), but mainly with the latter. Comments made by both speakers and by contributors to discussions seemed to indicate that in the field of plastics the architect is mentally 'bone idle'. The impression was given far too often that the architect is not a chemist (nor will he learn to be!) and cannot, therefore, be expected to know about the construction and behaviour of plastics. Why not? Most architects are not botanists either, but would not so openly admit their ignorance of timber, nor, not being geologists, their ignorance of stone!

Plastics are relatively new, and the present day designer must essentially know his materials, and design (with industrial liaison) within, and up to, limits of these new materials.

2. Industry is at fault, to a lesser (although more fundamental) degree, in that (*a*) in producing a new material having a very wide field of application, the technicians responsible for the introduction of the materials appear to apply the materials to existing instead of purposely designed forms (e.g. plastic baths, rainwater gutters, etc., which look for all the world like their vitreous or painted cast iron counterparts). Furthermore, (*b*) the industry generally seems to carry out its own design of building components with little concern for basic constructional knowledge or analysis.

May I offer the following constructive suggestions?

(*a*) To architects—forget that as a profession we are mainly exercised in the Arts and that 'chemistry' might once have been a dirty word! To know the material intimately is essential if we are to apply them sincerely rather than superficially.

(During the last 2½ years the writer has spent a little time in the study of Organic Chemistry, and in visiting raw material manufacturers and laboratories; a two months' 'apprenticeship' as an operative in a G.F./Polyester component factory and has introduced reinforced plastics to student-architects. It was, therefore, interesting to note that from the 70 odd architects and engineers reported to be present at the 400 strong conference, five were either Leeds or ex-Leeds students.)

(*b*) To industry—share the design of structures and components with appreciative designers and work as a team, not as arms without a body. Furthermore, plough back some of your profits into project developments, a suggestion which could only be followed up successfully, in my opinion, by the establishment of post-graduate research teams comprising architects, engineers and plastics technicians, working as one entity with shared specialised knowledge.

If these suggestions are accepted, then it is my sincere belief, that if we should get 'no forrader' then at any rate we should not deteriorate so far as to accept as the limits of plastics, say, the imitation of rough stone walling in polyester resins, nor indeed the clipping on of a plastics face to a wooden window frame!

KENNETH TURNER [*F*]

PERCEPTION AND MODULAR CO-ORDINATION

Dear Sir,—Mr. Alexander has built himself a glass house from which to throw stones at Le Corbusier. He says that by putting $b = \phi a$ in his formula $na + mb$, and removing 'several members of the ensuing set of linear combinations', we are left with the number pattern of the Modulor. It is true that out of the first nine numbers six do belong to the Modulor but to get the next six one has to write down over a hundred more. In this context to talk of removing 'several' of the numbers looks remarkably like an attempt to 'hoodwink the reader'. While Le Corbusier's numbers get further and further apart, Mr. Alexander's get closer and closer together.

But perhaps he is not very interested in what happens to the bigger numbers, as he suggests that the eye 'most readily picks up lengths between 3 ft. and 10 ft.', and implies that other dimensions are not important visually. On what theory of perception is this extraordinary idea based? Is Mr. Alexander's eye tethered, so that it cannot get close enough to a building to see the detail, or far enough away to see the relationships between the larger dimensions?

As a matter of fact, Mr. Alexander has the key to the problem of proportion in his grasp at one point, where he speaks of the appearance of 'rectangles of similar shape' as one of the ingredients of visual order. But he shows no recognition of the fact that this depends on the existence of patterns of proportional relationships amongst the dimensions he is considering, or that such a pattern is characteristic of the Modulor. Otherwise he might have found that patterns of this sort can only be produced by using certain values of r in his formula. Of these values, which are tabulated on p. 145 of my *Theory of Proportion in Architecture*, only the smaller ones are likely to be of any use in practice. It is no accident that the smallest is ϕ itself, or that they include 2, $1 + \sqrt{2}$ and $1 + \sqrt{3}$, which play a similar role in other systems of proportion. I suggest, therefore, that while 'countless other systems' may be possible in theory, in practice only a few are likely to be effective in producing visual order.

Yours faithfully,

P. H. SCHOLFIELD [*A*]

Dear Sir,—Mr. Alexander has expertly demolished the Golden Section in order to exalt the Module. Some years ago I took a swipe at the Golden Mean myself but I don't think I really convinced the then Hon. Secretary, Mr. Roberts, that twelve or thirteen out of a possible 19,000 or so ways of joining a given set of points on the elevation of the Parthenon was hardly evidence. (The thickness of the lines used is irrelevant. They could have been ever so thin for the Sectionists' purpose. There was no deliberate attempt to deceive the reader, merely an exposure of sublime self-deception and some little learning.)

Having tilted at the Golden Mean I am concerned now to have a prod at the Mod. There are too many weaknesses in the structure of Mr. Alexander's thesis for it to be allowed to pass unchallenged. He will, I am sure, admit that the first of these is that nobody knows yet whether the eye prefers to be lazy or busy and therefore whether the pleasure of pattern is in rest or in restlessness. To add to our confusion it is suggested that these ideas are not mutually exclusive.

The second weakness—and this is the nub of the matter—is pointed up in my own first sentence. What is the use of replacing a theory of pattern which can only be demonstrated by joining arbitrary points on an elevation of the Parthenon, Notre Dame, or some other to form apparently significant rectangles with some other theory of the intrinsic beauty of other rectangles? If additive, subtractive, multiplicative, or dividitive proportions have visual, visible, perceptible significance they will undoubtedly be applied by some starry-eyed discoverer to the gnarled face of some hoary holy building with equal rapture as they contrive to make them fit. What Mr. Alexander has said amounts to something like this: 'There is, in spite of the nonsense and the mystique, some core of truth in the notion that visual enjoyment of pattern depends on proportions. The Golden Section is only one such and has only limited application—(i.e. if you apply it you enjoy it)—here however is a general theory of proportion which embraces all the interesting and particular theories and curiously enough it gives us the Modular Theory.'

And there is the third weakness; by what

logical step did we arrive at the notion that an additive principle makes a visually satisfactory pattern? The answer is that we didn't. It was only suggested; but look what happens when you accept the suggestion. You get a lovely theory of number. That, Sir, is *all* you get. If Mr. Alexander has read his Eddington as well as his obvious erudition would suggest, he may recall that very great man's careful demonstration of the fact that numbers lead to numbers, nothing more. The use one makes of numbers is something else again. The use Mr. Alexander makes is to say that we do not really know that they are significant but if they are then these are the numbers you should use; multiples of 4 in. Why? Because it is the HCF of 3 ft. and 5 ft. 4 in. Why these two sizes particularly? Because the eye can appreciate, architecturally speaking, 3 ft. and, for some unexplained reason 5 ft. 4 in. But the eye looks at all things, the print on this page for instance.

What has 4 in. or 3 ft. to do with the delightful type in which this letter may be set up? Or could it be shown that there is nevertheless an additive series in its proportions? And if so, so what? Do you think, Sir, that the typographer used it?

What do the Modularists or Modulators bracketed as they must now be with the Sectionists or Golden Meanies, seek to prove? That buildings to be beautiful should have a system of proportion, and therefore that buildings which do not have such a system are not beautiful? Seriously I do not really think that that is what they mean to say. Rather do they intend to show that a proposal for a technical advance can be bolstered by an aesthetic theory itself justified by some rudimentary mathematics. I think they should stick to the technical or manufacturing proposals. Even at that it is not immediately obvious what the Module would do to an anti-elastic shell. What manufacturing process could Modulate the tapering glazing areas under a hyperbolic paraboloid or the verges of a prismatic roof? Or do Nervi and Candela not count?

Our faith, Sir, to paraphrase Mr. Alexander, may be in some measure understood, but it may in perhaps greater measure be misunderstood.

Yours faithfully,

J. C. HOLMES [*A*]

Dear Sir,—Though humble before such evident erudition and deeply impressed by such confidence in the virtue of mathematics—symbolic analysis—I have yet to be persuaded that Mr. Christopher Alexander's studies (*Perception and Modular Co-ordination*) serve any significant purpose unless to confuse certain issues.

For instance, the idea that 'hope of understanding visual aesthetics is (now) just appearing' seems to have its ground in positivistic misconception, precisely in ambiguity with roots in a cognitive bias. For, if 'understanding' here means 'rational (postanalytic) understanding', as it almost certainly does, then it is only to be said that no idealistic analysis, subtle howsoever, can ever as such illuminate what is, and what must continue to be, a problem of sensibility, that is to say, of nervous (infra-empiric) response giving some form of nervous satisfaction. Perception doubtless involves, at least as a process, some effort; but, if response to form is properly *pre*-perceptual—and only assumed perceptual to allow of rational entry—that is wholly beside the point in any thought on this problem. And incidentally, the gestalt account of perception has other implications which seem to be more significant, or so at least for the artist, than those, with stress on the process, mentioned by this author.

For my part, I incline to the opinion that modular theory, whatever its detailed form, is little more than a means whereby artistry is to be given some 'scientific' prestige, or in some manner rationalised, made respectable intellectually. Hence, it signifies little to me whether it is held to be 'scientific' or 'mystic', a rather loose term in this context. What does signify is the implicit assumption that artistry cannot stand by itself but must, by other norms than its own, be justified or explained. And it signifies because the refinement of sensibility, which is the only valid end in 'architectonic' discussion, is travestied and grossly obscured under so injudicious a reading.

Mr. Alexander, and the editors who appear to encourage these rather pointless displays of learning under the vague impression that they relate to artistry, would then do well to ask themselves what purpose in this is being served, what the justification for any such effort at all? No artist of the least maturity is other than contemptuous of attempts at 'explanation', conscious that *his* discipline simply does not permit of it. It is of its very nature one of 'trial and error', generalised with caution on the modestly-held assumption that nervous (sensuous) response to form is broadly common. The interest here is simply refinement of sensibility, whereby one artist, so to say, gives a hint to another. Or, if it must be discursive, then it is very surely thought upon the value, as architectonic strictly, which is universally given through the organisation of form. This clearly begins in idea that the 'scale' of that organisation, together with the 'circumstance' in which any art is active, and not some static 'proportion'—in fact a secondary issue—are the real prerequisites for any such discussion. But matters such as these are never broached in the JOURNAL, which rather seems to aspire to reputation as 'learned', equivalent in this context to 'insensitive', 'inartistic'.

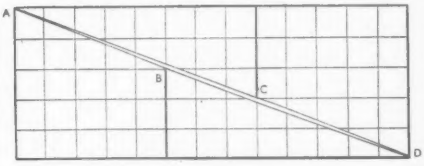
This letter is fitly concluded with a brief quotation from Huxley, who refers in a recent essay to 'a particularly smelly cultural red herring drawn across the trail that leads . . .'—in this case to a little *artistic* depth and sanity.

I am, Sir,

Yours faithfully,

M. F. H. ROE [*A*]
Puerto Rico.

Dear Sir,—Mr. Alexander cites the old 'paradox' of the 64 squares in his article, but his explanation of the additional square that appears when the chess board (for so it is) is cut into four pieces and reassembled to form a rectangle of 13 by 5 squares is wrong. As Mr. Alexander would not have made himself responsible for his solution of the puzzle without good authority for doing so, and as I have never seen a solution published or demonstrated, I think it may interest your readers if I present both as only hatched out by a coalition of the family brains.



Gradient of line $AB = 2$ in $5 = \frac{2}{5} = 0{\cdot}4$

Gradient of line $BD = 3$ in $8 = \frac{3}{8} = 0{\cdot}375$

Gradient of line $AC = 3$ in $8 = \frac{3}{8} = 0{\cdot}375$

Gradient of line $CD = 2$ in $5 = \frac{2}{5} = 0{\cdot}4$

Hence on rearranging pieces to form rectangle:

ABD is concave up

ACD is concave down

and area enclosed by *ABDCA* represents area of one square.

Yours faithfully,

H. B. CRESWELL [*Retd. F*]

Dear Sir,—Christopher Alexander in his article *Perception and Modular Co-ordination* missed the basic point of Le Corbusier's Modulor, i.e. it is based upon the human scale.

This relation to the human scale must be a primary requirement of any modular system, intended to be used in the design of buildings and equipment for human habitation and use.

Has the 4 in. module this relation? Is the human figure based upon a 4 in. module?

Yours faithfully,

DEREK GOAD [*Student*]

REPORT ON ARCHITECTURAL EDUCATION

Dear Sir,—I am concerned by the possible long-term effects of the changes in the present education system for the profession accepted by the Council on 6 October.

The Appendices presented on this occasion reveal some interesting facts:

1. That four-ninths of the intake to the profession is from staff trained part-time.
2. That about 20 per cent of office staffs in the U.K. consist of architects in the course of training.
3. That a fairly high percentage of the unqualified staff (42 per cent in the case of the large local authority considered) are shown in Appendix 4 to be engaged upon work involving some design ability.

It is unlikely that the above percentages will change a great deal in the future since they are, presumably, the result of a natural economic balance within the profession.

I have been concerned with part-time architectural training for twelve years and in practice for twenty. Taking all into account, I find it surprising that the Institute now considers its members' interests would be best served if almost half of their future staffs were trained, not as architects, but as builders. Moreover, that the proposals for this training should make no reference to design, and should be carried out quite separately from the Schools of Architecture, and that the products of this training should not be members of the R.I.B.A. but of their own organisation and, presumably, in due course that the R.I.B.A. would have no control whatsoever over their training. They would in fact 'hear no architecture, see no architecture, speak no architecture'.

At this stage the profession must think very deeply about the step it is to take this year, for from September 1960 the die will be cast.

Perhaps now it is not too late to consider some overall reorganisation of the system whereby all are trained together for an initial period, after which architects and technicians could separate to concentrate on their respective spheres to meet again with their groundwork in common when they enter the profession as qualified practitioners.

Yours faithfully,

ALAN MILLER [*F*]

THE KALENDAR AND THE CODE

Dear Sir,—Having devoted ten years or so to the practice of architecture, and likely within a decade to attain 'the age of indiscretion' of your correspondent Mr. R. A. McLean, I am well aware of the limitations of the Code of Professional Conduct.

If, however, Mr. McLean will read the Code again he will find that 'etiquette and all it implies' requires only that he shall notify the architect previously employed by his potential client. Should he be one of those with several addresses in the Kalendar his name will be the more readily found. The Kalendar is not, in my opinion, of real interest outside the profession. It is not unlikely that the architect his potential client was prepared to overlook had little to offer commensurate with 'thirty years of experience'.

The crippling and stultifying effect of the Code of Practice, as at present constituted, is most keenly felt during the early years of practice. Compliance with the 'school rules' continues for some unspecified period to make a complete lottery of a profession which, in my experience, has a great deal to offer, and certainly no less than other professions possibly more highly held in public esteem.

It was repugnant to me to be told by one of another profession that he joined this and that at the commencement of his practice, but now that he is well known he had withdrawn his support! The small private architect has little time or money to indulge in all those legitimate pursuits which are likely to bring his name before any section or sections of the public, if indeed he has the inclination. It is not unlikely that he will shrink from any form of public service which would raise doubts as to his integrity.

Yet it is abundantly clear that the public at large desire to employ the architect, and on the rare occasions when they are brought into contact with him, they are almost without exception grateful for the service provided. They may not always be prepared to contribute to the much greater overhead expenses of our larger brethren and demand a personal service which they are unable to provide.

However the hazard of meeting a potential client on the train or at a neighbour's cocktail party is so great that only the foolhardy or those with an open cheque book are likely to succeed.

We read of improved standards of entry to the profession and increasing numbers of those qualified by examination. It is indeed a great pity that far greater numbers, having benefited I trust from a number of years in the service of others, should not be able to exercise their talent and experience in the field of private practice in this country.

Meanwhile many potential private architects, capable of success in a free society, continue to dissipate their talents and energies, perhaps largely untapped, in a secure bureaucracy.

Surely the 'packaged deal' is little more than the contractors' effort to sell the 'architecture' of his making. In my opinion, architects should, within reasonable bounds be encouraged to go out and sell architecture themselves, by which means lasting benefit would be bestowed, not only on the practice of architecture, but also on the public at large.

Fortunately, Mr. McLean, there's a good deal of luck in this game, unbounded by any rules of 'etiquette', and I am sure I am not alone in wishing you a greater measure of success in the future.

Yours faithfully,

FRANK SENIOR [*A*]

SMALL HOUSE PLANS

Dear Sir,—I was very interested to read in your October issue a letter addressed to you by Mr. John S. Houghton on the subject of what he refers to as 'blatant advertising' on a B.B.C. Television programme in which an architect was interviewed in connection with plans and models of houses.

In an ever-changing and troubled world, I am most reluctant to participate in such a controversial subject, nevertheless I feel Mr. Houghton should review this matter more seriously before making such observations.

Personally I congratulate the sponsors of such a programme on their vision in presenting a member of our profession, and provided he is an architect of proven ability, he should repeat the treatment on every possible occasion.

After over forty years in this profession, I think the time has long since passed when the stupid and outmoded restrictions imposed upon us regarding advertising should be removed, and each and every one of us permitted free and unencumbered to promote our services in any way we consider fit and necessary.

In this country advertising is the 'essence of our existence'. From morning, noon and night we are told by radio and television what to eat, drink, smoke and take for the resultant indigestion, and if we consider we may suffer from a 'heart condition' we are instructed by the same medium to apply to an Insurance Company for a book on the subject.

It is acknowledged that for many of the 'monumental monstrosities' now being erected in various parts of the world, the authors should remain anonymous, but those producing real 'architecture' who can devise a dignified manner in which to 'sell our services', as we architects are striving to do, then they are entitled to every support, and not condemnation.

Were it not for advertising by those who can afford it, the 'packaged deal' would not be so prominent, and those builders who have developed their organisations on this basis, publish photographs of their work, whilst we are restricted in this regard.

I do not also agree that we should be so dictatorial as Mr. Houghton suggests by demanding legislation regarding our employment.

The answer to many of our problems would be in my opinion for all civic bodies to agree that only plans prepared by qualified architects for either new buildings or alterations thereto, would be approved.

Such a measure would protect the building owner as in this country anyone can obtain a building permit, and yet a prescription for medicine must be signed and prepared by a qualified medical practitioner.

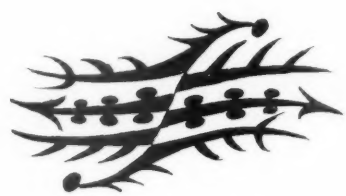
After all, who would deny that endeavouring to erect a building without professional guidance is the same as anyone trying to remove your own appendix?

May I congratulate Mr. E. B. Redfern upon his observation, with which I most heartily concur.

Yours truly,

LESLIE H. KEMP [*F*]
Ontario.

[*Other members have written in on this subject. As many of the letters as space allows will be printed in the February issue.*—Ed.]



Notes and Notices

NOTICES

Fourth General Meeting, Tuesday 2 February, 1960 at 6 p.m. The Fourth General Meeting of the Session 1959–60 will be held on Tuesday, 2 February 1960 for the following purposes:

To read the Minutes of the Third General Meeting held on Tuesday 5 January 1960.

The President, Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A., to deliver an Address to architectural students, and to present the medals and prizes 1960.

Mr. Philip Powell, A.A.Dipl. [*A*], to read a criticism of the designs and drawings submitted for the medals and prizes 1960.

(Light refreshments will be provided before the meeting.)

Session 1959–60. Minutes II. At the Second General Meeting of the Session 1959–60, held on Tuesday 8 December 1959 at 6 p.m.

Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A., President, in the Chair.

The meeting was attended by about 550 members and guests.

The Minutes of the Inaugural General Meeting held on Tuesday 3 November 1959 having been published in the JOURNAL, were taken as read, confirmed and signed as correct.

The following members attending for the first time since their election were formally admitted by the President: *As Fellows:* R. T. Hill, W. J. Jobson, H. J. Whitfield Lewis, D. O. Searle, F. G. West; *As Associates:* A. S. Angold, K. H. Aston, John Baily, N. J. Bourne, A. H. Caldwell, A. L. Cuming, L. S. Fairweather, J. P. Fallon, Alec Flinders, Z. Gasiewicz, Russell Hodgson, J. H. Innerdale J. A. McCormack, J. F. McLaughlin, K. N. Mehta, S. S. S. Moore, John Perryman. Dennis Porter, A. F. Rutter, J. J. Scott, T. R. Senior, G. J. Stobie, P. T. Thrasher, A. J. Upton, (Miss) P. J. Wallis, A. C. Watts, R. J. White, R. G. Worthington.

Professor Sir William Holford, M.A., P.P.T.P.I., F.I.L.A., [*F*], having read a Paper on 'Brasilia', a discussion ensued and on the motion of Senhor A. B. L. Castello-Branco, Chargé d'Affaires, Brazilian Embassy, seconded by Sir Miles Clifford, K.B.E., C.M.G., E.D., Director, Leverhulme Trust Fund, a vote of thanks was passed to Sir William Holford by acclamation and was briefly responded to.

The proceedings closed at 7.55 p.m.

British Architects' Conference 1960. The British Architects' Conference 1960 will be held at Manchester from 15 to 18 June, at the invitation of the Manchester Society of Architects. Full details of the programme will be published in due course. Particulars of accommodation in hotels is given below.

Annual Subscriptions and Contributions. Members' subscriptions and Students' contributions for 1960 became due on 1 January.

	£	s.	d.
Fellows	12	12	0
Associates	7	17	6
Licentiates	7	17	6
Students	2	2	0

For members resident in the trans-oceanic Dominions who are members of Allied Societies in those Dominions, and for members resident overseas in areas where no Allied Society is available, the amounts are as follows:

	£	s.	d.
Fellows	7	17	6
Associates	5	15	6
Licentiates	5	15	6

Building Surveying Examination. The R.I.B.A. Examination qualifying for candidature as Building Surveyor under Local Authorities will be held at the R.I.B.A. on 6, 7 and 8 April 1959. Applications for admission to the examination must be made not later than 12 February on the prescribed form to be obtained from the Secretary, R.I.B.A.

BOARD OF ARCHITECTURAL EDUCATION

R.I.B.A. Examination in Professional Practice and Practical Experience. The examination in Professional Practice and Practical Experience was held in London and Edinburgh on 16 and 17 November, 1959. Of the 190 candidates examined, 174 passed and 16 were relegated. The successful candidates are as follows:

Adkins: A. J.
Ainscow: T. N.
Allen: H. E.
Andrews: B. R.
Auger: G. C. B.
Bailey: D. W.
Barber: C. E.
Barber: R. A.
Barnby: Clive
Barnes: F. J. E. C.
Barnes: G. A.
Beales: Colin
Bentham: Neil
Berney: Keith
Bound: P. J.
Bousfield: E. J.
Braddock: M. I.
Brown: D. B.
Brown: W. B.
Bruce: J. F.
Buck: J. A.
Cameron: Duncan
Campbell: M. F.
Chamberlain: Alan
Chamberlayne: Derek
Chapman: W. J. M.
Chew: T. W.
Child: Ronald
Clancy: C. A.
Clow: C. A.
Comley: E. T. P.
Comrie-Smith: G. A.
Cook: W. V.
Cooke: J. V.
Corvin-Mlodnicki: A. A.
Cossins: J. S.
Cox: J. M.
Crawford: Archibald
Crawley: P. J.
Crossley: D. P. V.
Cull: N. F.
Cunning: J. L.
Cutler: A. M.
Davies: R. S. I.
Day: L. A.
Dean: Ronald
Deans: John
Dixey: M. G. D.
Donaldson: W. F.
Donnell: D. N.
Duckworth: T. R.
Earwaker: Jack
Edwards: Emyr
Evans: A. J. A.
Forsyth: J. I.
Frost: K. J.
Galvin: Patrick
Glenister: D. A.
Goldsack: C. E. J.
Goldsmith: J. W.
Gooch: James
Gostage: A. D.
Guy: Richard
Haddow: T. H.
Hall: John

BRITISH ARCHITECTS' CONFERENCE, MANCHESTER, 15–18 June 1960

The Conference Committee have made provisional reservation of accommodation at the following hotels for members attending the Conference. *Early application must be made to the hotels mentioning the British Architects' Conference*, as they will not guarantee reservations later than the end of March.

Hotel	*A.A. Category*	*Rooms*				*Approx. Charges Bed and Breakfast*	*Distance from City Centre*
		Double	*Twin Bedded*	*Three Bedded*	*Single*		
Manchester							
(C) Grand Hotel, Aytoun Street, Manchester 1	4 Star	6	—	—	—	50/– to 100/–	—
(C) Midland Hotel, Peter Street, Manchester 2	4 Star	100 (including twin bedded)		2	60	62/6 to 100/–	—
(C) Queen's Hotel, Piccadilly, Manchester 1	—	40	—	—	20	49/6	—
(C) Mitre Hotel, Cathedral Gates, Manchester 3	2 Star	—	6	—	6	27/6	—
(U) Lansdowne Hotel, 346 Wilmslow Road, Manchester 14	—	—	5	—	5	25/– to 45/–	2 miles
Sale							
* Brooklands Hotel, Brooklands	2 Star	—	4	—	4	25/– to 50/– + 10%	6 miles
Timperley							
* Woodlands Hotel, Wellington Road	—	—	—	—	10	30/– + 10%	6 miles
Stockport							
* Alma Lodge Hotel, Buxton Road, Mile End	—	—	7	—	20	37/6 to 75/–	7 miles
Alderley Edge							
* Queen's Hotel	3 Star	—	15	—	—	30/– to 35/–	14 miles
Knutsford							
* Royal George Hotel, King Street	3 Star	1	5	—	3	27/6 to 68/– + 10%	16 miles

Hotels marked (U) are unlicensed.
Hotels marked * have garage accommodation or private parking.
Hotels marked (C) have garage accommodation near the hotel.

Hall: J. B.
Hands: Raymond
Harris: C. L.
Heasman: Albert
Herrick: J. A.
Holland: M. G.
Holmes: Eric
Horne: D. D. G.
Horsman: M. A.
Howard: M. L.
Howitt: D. A.
Hughes: V. O.
Huyton: G. E. A.
Jackman: C. B.
Jackman: L. E. C.
Jarvis: G. F. S.
Jeffers: B. P.
Jenner: Michael
Jessop: B. G.
Johnston: J. E. (Miss)
Jones: D. W.
Jones: M. M.
Kendall: E. J. H.
Kershaw: J. T.
Knight: R. S.
Kythreotis: M. D.
Laniado: Ralph
Laroya: H. R.
Lawson: I. F.
Lever: R. J. A.
Lewis: J. F. R.
Lord: T. L.
McGregor: K. S.
Maggs: J. K.
Marsden: A. T. W.
Marsh: E. D.
Masani: D. D. (Mrs.)
Mather: R. W.
Mead: L. C.
Meek: A. J.
Memess: C. A.
Mercer: A. F.
Mills: J. P.
Morum: R. D.
Munden: P. J.
Murphy: Terence
Noble: Harry
O'Dell: D. L. W.
Paige: J. B.
Parker: K. W.
Parkin: Ronald
Patterson: I. R.
Pearson: N. A.
Perkins: A. C.
Pitcher: Peter
Portman: F. W.
Quann: A. G.
Ransley: F. D. D.
Reczelewski: Edward
Revels: S. M.
Revill: G. L.
Reynolds: G. J. D.
Riby: Harry
Roberts: W. G.
Robson-Smith: R. W.
Rolls: K. W.
Rudrum: A. G.
Russen: P. W.
Salkild: M. F. C.
Sanders: Ian
Saunders: P. H.
Sellors: G. W.
Smalley: Peter
Smith: J. D. V.
Smith: L. L.
Smith: P. B.
Snow: T. C.
Stansell: E. M. (Miss)
Stanton: F. H.
Stokes: J. A.
Stuart: Malcolm
Sukumaran: K. G.
Sweeny: M. G.
Tallo: Gabor
Taylor: A. S.
Tham: L. B. K.
Torrance: I. M.
Trussler: D. J.
Tulip: James
Turner: L. W.
Turton: J. F.
Ulander: S. O. H.
Vallis: W. W. R.
Van Mol: G. A. J.
Ventham: J. S.
Wall: Trevor
Walters: G. F.
Warburton: Derek
Ward: Ian
Webster: D. G.
Whiffin: Mervyn
Wili: B. M.
Wilkins: John
Williams: P. J.
Willson: N. L.
Wong: Kin Men
Wood: B. W.
Wood: E. H.
Worsley: Colin

The R.I.B.A. Intermediate Design Prize and Victory Scholarship Competitions, 1959-60. The attention of intending competitors is called to the fact that the closing date for the submission of forms of application for the R.I.B.A. Intermediate Design Prize is 15 January 1960.

The R.I.B.A. Intermediate Design Prize, a certificate and the sum of £100 for the study of contemporary architecture in Europe, is confined to Probationers and elected Students of the R.I.B.A. and elected Students of Dominion Allied Societies who have passed the R.I.B.A. Intermediate or equivalent examination, or produce certificates from members of the R.I.B.A. to the effect that they have reached the required standard. Students who have passed the R.I.B.A. Final or equivalent examination or who will have passed the R.I.B.A. Final or equivalent examination at the time of the *en loge* competition are not eligible to compete.

Under the arrangements for the competition only one *en loge* competition will be held. This will take place in London and at non-Metropolitan centres on Tuesday 15 March 1960.

The Victory Scholarship, a Silver Medal and the Sum of £120, is confined to members of the R.I.B.A. and of the Allied Societies Overseas and elected Students of the R.I.B.A. and of Allied Societies Overseas, who have passed the R.I.B.A. Final or equivalent examination, or who have produced certificates from members of the R.I.B.A. to the effect that they have reached the required standard. With regard to the R.I.B.A. Final or equivalent examination, Students need not have passed the Professional Practice Examination to be taken after 12 months' practical experience.

The *en loge* competition for the Victory Scholarship will be held on the same day as that for the R.I.B.A. Intermediate Design Prize, i.e. Tuesday 15 March 1960. The closing date for the submission of forms of application is 15 January 1960.

Forms of application for admission to the competitions may be obtained from the R.I.B.A., 66 Portland Place, W.1.

Notes from the Minutes of the Council

MEETING HELD ON 8 DECEMBER 1959

Membership. The following members were elected: as Honorary Associate 1; as Fellows 14; as Associates 109.

Students. 58 Probationers were elected as Students.

Applications for Reinstatement. The following applications were approved: as Associates Robert Ingham Atkinson, Mrs. Winifred Joyce Evans, Hugh Aitken Hutchison Walker; as Licentiates: Cyril William Garton, Ernest Tyler-Berry.

Obituary. The Secretary reported with regret the death of the following members: Charles Alfred Harding [*F*], Lawrence Anderson Rolland [*F*], Peter Berner [*A*], Augustus G. Bryett [*A*], Denys Myers [*A*], Henry Munro Cautley, F.S.A., [*Ret'd. A*], Douglas James Fyffe [*L*], Cornelius Fletcher Johnson [*L*], Percy Walter Reed [*Ret'd. L*], Arthur Young [*Ret'd. L*], Ramdas Prahlad [*Student*].

COMPETITIONS

Residential Development at Highfields, Halesowen, Worcestershire. Last day for submitting designs: 31 March 1960. Full particulars were published in the JOURNAL for November, page 28.

Metropolitan Cathedral of Christ the King, Liverpool. Full particulars were given in the JOURNAL for September, page 404, but in addition it should be noted that *corporate members of the overseas societies allied to the R.I.B.A.* are also invited to compete.

Last day for submitting designs: 4 p.m. on 3 August 1960. Last day for questions: 15 December 1959.

Design of Shopping Centre and Adjacent Houses, Grangemouth. Last day for submitting designs: 30 January 1960. Full particulars were published in the JOURNAL for October, page 442.

Extension to County Buildings, Edinburgh. Last day for submitting designs: 15 March 1960. Full particulars were published in the JOURNAL for October, page 442.

County Offices, Taunton. Last day for submitting designs: 5.30 p.m. on 15 February 1960. Full particulars were published in the JOURNAL for July, page 329.

COMPETITION RESULT

Roads Campaign Council Competition

1. (£2,000) J. A. Proudlove, M.Eng., M.I.Mun.E.
2. (£1,000) W. K. Smigielski, Ing.Arch.(Warsaw), M.T.P.I.
3. (£500) I. W. Morrison.
4. (£250) Peter Brigham, T.P.Dip., [*A*], Gerald Latter, B.Arch.(L'pool), [*A*] and Bruce Mecartney; Dr. Ivan Boileau, M.A., Ph.D., T.P.Dip., A.M.T.P.I., Dr. George Chadwick, M.A., B.Sc., Ph.D., A.M.T.P.I., A.I.L.A. and Franklin Medhurst, D.F.C., S.P.Dip., A.M.T.P.I., [*A*].

ALLIED SOCIETIES

Changes of Officers and Addresses

New Zealand Institute of Architects, Auckland District Branch: Chairman, Graham F. Dawson [*A*]; *Taranaki-Wanganui-Manawatu District Branch:* Hon. Secretary and Treasurer, B. C. Harding, P.O. Box 154, Hawera, New Zealand.

Institute of Northern Rhodesian Architects. Hon. Secretary, D. E. Clark [*A*], P.O. Box 1001, Kitwe, Northern Rhodesia.

West Yorkshire Society of Architects, Wakefield Branch. Hon. Secretary D. Brian Roy [*A*], Turnley House, 202 Harrogate Road, Leeds 7.

Devon and Cornwall Society of Architects. Annual Banquet and Ball. The Society's annual banquet and ball was held at the Imperial Hotel, Exeter on Wednesday 28 October 1959. The President of the Society, Mr. J. Radford [*A*] was in the chair and among the guests were Mr. Basil Spence, President R.I.B.A.; Alderman C. J. Woodland, Mayor of Exeter; Alderman E. P. Wheatley, Sheriff of Exeter; the Very Rev. A. Ross Wallace, Dean of Exeter; and Dr. J. W. Cook, Vice-Chancellor of Exeter University.

The Dean of Exeter proposed the toast of the Devon and Cornwall Society of Architects and Mr. Radford replied. The toast of the R.I.B.A. was proposed by Alderman Woodland and Mr. Spence replied. Mr. J. H. Crowther [*F*], Senior Vice-President of the Society proposed the toast of the Guests and Dr. Cook replied.

Federation of Malaya Society of Architects. The Federation of Malaya Society of Architects held an exhibition at the British Council Centre, Kuala Lumpur, from 19 to 23 October 1959, which included drawings, photographs and models of recent work in Malaya designed by members of the Society, and photographs of the 10th Honour Awards of the American Institute of Architects (by courtesy of the United States Information Service).

The President, Mr. T. A. L. Concannon [*F*], at the opening ceremony introduced His Excellency the Ambassador of the United States of America to Malaya, Mr. Homer Byington, Jun., who spoke briefly of the American exhibits. The President then invited the Deputy Prime Minister, Tun Abdul Razak, to open the exhibition.

Tun Abdul Razak in his opening address congratulated members of the Society on the high quality of their work, adding: 'My comment is a minor criticism that springs from both patriotism and sentiment.

'Wherever possible, I would like to see some local flavour in our new buildings. It may be Malayan motifs in decoration, it may be a mural of a Malayan scene, it may just be the line of the roof.

'Whatever it is, it should evoke some suggestion of Malaya. Otherwise we are in danger of getting standardised and functional, without any identity of our own.'

North Staffordshire Architectural Association. Annual Dinner. The Association's annual dinner was held on Tuesday 27 October 1959 at the North Stafford Hotel, Stoke-on-Trent, with the President, Mr. C. Knapper [*F*] in the chair. Dr. Barnett Stross, M.P. for Stoke-on-Trent Central, was the guest of honour. The R.I.B.A. was represented by Mr. A. G. Sheppard Fidler, Vice-President, accompanied by the Secretary, Mr. Gordon Ricketts, M.A. Among the principal guests were Mr. V. J. McKnight, President of the North Staffordshire Law Society; Mr. A. Courtney Campbell, President of the Society of Dental Surgeons; Mr. C. Bullock, President of the North Staffordshire Institute of Chartered Accountants; Mr. P. Woodcock [*F*], Deputy County Architect; Mr. D. F. Brewester, City Surveyor; Mr. N. Hancock, President of the North Staffordshire Federation of Master Builders and Mr. Ashley-Bailey, Chairman of the North Staffordshire Chartered Surveyors' Institute.

Mr. C. Knapper proposed a toast to the city and Alderman Harold Clowes, the Lord Mayor, replied. Other speakers included Mr. Sheppard Fidler, Mr. M. Upright, Past President of the Association and Mr. A. Hurst, President of the North Staffordshire Building Trades' Employers Association.

GENERAL NOTES

Michael Ventris Memorial Fund Awards. The Michael Ventris Memorial Fund Award for 1960, value £100, will be awarded to an architect or student of architecture. Applications should be submitted to the Architectural Association.

1. The objects of the Fund are:

(*a*) To promote the study of Mycenaean civilisation or kindred subjects by Awards or Studentships to students of post-graduate status or other comparable level of achievement.

(*b*) To promote the study of Architecture by Awards or Studentships to architects or students of R.I.B.A. Intermediate status or other comparable level of achievement.

2. The Awards will be open to applicants from all countries.

3. The Awards will be made by an Advisory Committee appointed by the Institute of Classical Studies and the Architectural Association acting jointly.

4. The Award in 1958 was for Mycenaean studies, in 1959 for Architecture, and thereafter will normally be offered in alternate years for each subject.

5. On completion of their work, the successful candidates must be prepared to give evidence to the Advisory Committee of the study which the award has enabled them to carry out.

Architecture

6. It is proposed to make an award in the spring of 1960, if a suitable applicant comes forward. The Award will ordinarily amount to £100. Payment will be in one single sum on 1 March.

7. Applications should be addressed to the Secretary, Architectural Association, 34–36 Bedford Square, London, W.C.1, *not later than* 1 *February* 1960. Applicants should give particulars of their age, qualifications, academic record or other evidence in support of their application, together with the names of two referees, and should outline the work they intend to pursue in the event of the Award being made to them. Applicants may be asked to attend an interview.

Membership Lists

ELECTION: 8 DECEMBER 1959

The following candidates for membership were elected on 8 December 1959.

AS HON. ASSOCIATE (1)

Spragg: Cyril Douglas, C.B.E., M.A.(Dunelm), Hon. Member, American Institute of Architects; Hon. Corr. Member, Royal Architectural Institute of Canada; Hon. Associate, Royal Australian Institute of Architects; Hon. Fellow, New Zealand Institute of Architects; Hon Member, Institute of South African Architects; Hon. Member, East Africa Institute of Architects.

AS FELLOWS (14)

Bird: Godfrey Vernon, G.M., T.D., A.A.Dipl. [*A* 1934], Coventry.
Elliott: John Innes, B.Arch.(L'pool), [*A* 1937], South Croydon.
Fielding: Ronald Harold [*A* 1950].
Gunaratna: Neville Harris de Silva Abeysinghe, Dip.T.P.(Edin.), A.M.T.P.I. [*A* 1947], Colombo, Ceylon.
Hobday: Ralph, O.B.E. [*A* 1928].
Hopwood: James [*A* 1922].
Johnson: William Frederick, Dip.Arch.(Birm.), Coventry.
Le Fèvre: Richard Alfred, A.M.P.T.I., A.A.Dipl. [*A* 1937], Bath.
Lewis: Arthur Herbert, A.A.Dipl.[*A* 1949], Kitwe, Northern Rhodesia.
Meehan: George, D.A.(Glas.) [*A* 1950], Kuala Lumpur, Malaya.
Webster: Douglas Alan Stuart, M.A.(Cantab.), A.M.T.P.I. [*A* 1939], Devizes.

and the following Licentiates who have passed the qualifying examination:—

Haines: Harry Norman.
Underwood: George, Launceston, Tasmania.

and the following Licentiate who is qualified under Section IV, Clause 4 (*c*) (ii) of the Supplemental Charter of 1925:—

Colvin: John Macdonald, M.C., Bromley.

AS ASSOCIATES (109)

Alexander: Simon, B.Arch.(C.T.), Cape Town, South Africa.
Anderson: William David, D.A.(Dundee), Sudbury, Ontario, Canada.
Andersson: Brian Anthony Terence, Dip.Arch. (Natal), Pietermaritzburg, Natal, South Africa.
Armstrong: David Charles Edward, A.A.Dipl.
Barrat: Peter John Henry, Dip.Arch.(Birm.), Valletta, Malta. G.C.
Bell: David Burnett, Dip.Arch.(Queensland), Surfers Paradise, Queensland, Australia.
Benton: Ian Robert, Dip.Arch.(Abdn.), Bieldside.
Billingham: John Kynaston, Dip.Arch.(Manchester), Kingston, Ontario, Canada.
Bish: John Arthur, Kew, E.4., Victoria, Australia.
Bogue: Brian Patrick, B.Arch.(McGill), Rio de Janeiro, Brazil.
Bonamour: Arthur Joseph Montgomery, Durban, Natal, South Africa.
Booth: Geoffrey, Dip.Arch.(Sheffield), Doncaster.
Bowman: Denis Mortlock, Toronto 5, Ontario, Canada.
Bremner: Duncan Shearer, Dip.Arch.(Abdn.), Aberdeen.
Bremner: Hamish, D.A.(Edin.), Peebles.
Brenton: Benjamin Francis, Dip. Arch.(Auck.N.Z.), Christchurch, New Zealand.
Brown: Norman Millar, D.A.(Glas.), Toronto 7, Ontario, Canada.
Bywater: Trevor Malcolm Hallett, Dip.Arch. (Birm.), North Bay, Ontario, Canada.
Car: Edward Mikolaj, Cross of Gallantry (Polish), Croix de Guerre, A.M.T.P.I.
Carter: Philip William, Nairobi, Kenya.
Clinton: Paul Carol Kenealy, A.A.Dipl.
Conder: (Mrs.) Jean, A.A.Dipl.
Cotterell: Alan, Dip.Arch.(Birm.),Wolverhampton.
Cowie: George, Dip.Arch.(Abdn.), Hemel Hempstead.
Craig: Akinwande Olumide, Dipl.Arch.(Hull), Dip.C.D.(L'pool), Liverpool.
Crocket: Grahame Carl, A.S.T.C.(Arch.).
Cunliffe: The Hon. Roger, M.A.(Cantab.), A.A. Dipl.
Davies: Idris Glyn, Dip.Arch.(The Polytechnic), Nairobi, Kenya.
Davies: William Ross, Dip.Arch.(Manchester), Abergele.
Dewhurst: Derek Richard, Salisbury, Southern Rhodesia.
Dobbin: Henry Anthony Crawford, Dip.Arch. (Auck.N.Z.), Wanganui East, New Zealand.
Donaldson: Charles Tocher, Dip.Arch.(Abdn.), Buckie.
Douglas: John Conrad, B.A.(Arch.) (Sheffield), Port of Spain, Trinidad, W.I.
Driver: Haddon Keith, B.Arch.(Natal), Salisbury, Southern Rhodesia.
Drylie: Ronald, D.A.(Edin.), Edinburgh.
Evans: David Hugh Arthur, Morden.
Featherstone: Kenneth Anthony, Winnipeg, Manitoba. Canada.
Fick: Willem Liebrecht, Pretoria, South Africa.
Fleischmann: (Mrs.) Elsa, B.Arch.(C.T.), Wynberg, Cape, South Africa.
Foong: Yue Seng, B.Arch.(Melbourne), Kuala Lumpur, Malaya.
Fraser: Neil Mackintosh, Pietermaritzburg, South Africa.
Fraser: William Cowper, DiplArch.(Abdn.), Edinburgh.
Ghany: Mohammad Bin Abdul, B.A.(Arch.) (Sheffield), Kelantan, Kota Bharu, Malaya.
Gilbert: Stephen Hamilton, B.E.(Adelaide), North Adelaide, South Australia.
Gladstone: John Michael Christopher, Melbourne, Victoria, Australia.
Gomez Hall: John Ferdinand, Madrid, Spain.
Gordon: Peter David, Dipl.Arch.(Hull), Willerby.
Hansen: Gary Valentine, Toronto, Ontario, Canada.
Harrison: Colin Rees, A.A.Dipl., Accra, Ghana.
Heah: Johnny Hock Aun, M.A.(Cantab), Dipl. Arch.(U.C.L.), Penang, Malaya.
Heugh: David, D.A.(Edin.), Copenhagen, Denmark.
Housden: Warwick Henry George, B.Arch. (L'pool.), Don Mills, Ontario, Canada.
Howcroft: John Burdett, Dip.Arch.(Manchester), Oldham.
Hughes: Norman McLaurin, Wahroonga, New South Wales, Australia.
Hunt: (Mrs.) Anne Deborah, Dipl.Arch.(Kingston), Baltimore 18, Maryland, U.S.A.
Isham: Norman Murray Crawford, B.Arch.(C.T.), Avondale, Salisbury, Southern Rhodesia.
Johnston: Marnoch Cleland, Dip. Arch.(Abdn.), Aberdeen.
Jones: Michael Henry, Dipl.Arch.(Leeds), Minehead.
Keene: Roger James Branston, Dip.Arch.(Leics.), Leicester.
Kenney: William, Dip.Arch.(Auck.N.Z.), Wellington, N.4, New Zealand.
Lau: (Miss) Wai Chen, B.Arch.(Dunelm), Singapore 10, Malaya.
Lester: Leslie Neville, B.Arch.(Natal), Durban, South Africa.
Lewis: Denis Myles, Dip.Arch.(Sheffield), Scarborough, Ontario, Canada.
Lim: William Siew Wai, A.A.Dipl. Singapore 11, Malaya.
Louw: Tobias Johannes Wynand, B.A.(Stellenbosch), B.Arch.(C.T.), Paarl, South Africa.
Love: Lloyd Craig, Ashurst, Palmerston North, New Zealand.
McConville: William Lawrence, D.A.(Edin.), Belfast.
McCulloch: Robert, Willowdale, Ontario, Canada.
Manwaring: Anthony Ernest, Cape Town, South Africa.
Marshall: Albert Alan, Kampala, Uganda, East Africa.
Mascarenhas: Merwyn Mathias, Bombay 16, India.
Matthews: Geoffrey, A.A.Dipl.
Mayne: (Mrs.) Patricia Mary, B.Arch.(N.U.I. Dublin), Hong Kong.
Meldrum: Richard John, B.Arch.(Melbourne), Dip.Arch.(Melbourne), Camberwell, E.6, Victoria, Australia.
Miller: Glyn Owen, Nairobi, Kenya.
Morgan: Roy Gerwyn, B.Arch.(Wales).
Noller: James Edward, Ipswich.
North: Peter Willis, Dip.Arch.(Sheffield), Ipswich.
Orme: Bryan Clarke, B.Arch.(C.T.), Kitwe, Northern Rhodesia.
Palmoja: Kalju, Perth, Western Australia.
Percival: Edwin Philip, Dip.Arch.(Auck. N.Z.), Wanganui, New Zealand.
Pereira: George Carlo, Singapore 16, Malaya.

Pocock: Michael Arthur, A.A.Dipl., Lymington.
Powell: Peter Kingston, Kingston upon Thames.
Prout: Michael John, Dipl.Arch.(Oxford), Reading.
Roberts: Robert Bain, St. Peters, Adelaide, South Australia.
Robertson: John Downie, D.A.(Edin.), Kelty.
Robinson: John, B.Arch.(Dunelm), Ashington.
Sabikhi: Ranjit, B.Arch., M.C.D.(L'pool).
Schonegevel: Mervin Carstens, B.Arch.(C.T.), Cape Town, South Africa.
Smith: Darrell Bertrand, B.Arch.(Rand), Salisbury, Southern Rhodesia.
Smith: John Churchill, Toronto 7, Ontario, Canada.
Sowerby: Brian William, B.Arch.(Auck.N.Z.).
Stachowski: Henryk Gracjan.
Stallard: Reginald Theodore Morley, A.A.Dipl.
Taylor: David John, Dip.Arch.(Auck.N.Z.), Palmerston North, New Zealand.
Thong: Choe Loen Raymond, B.E.(Adelaide), Penang, Malaya.
Thorpe: Percy, Toronto 4, Ontario, Canada.
Toh: Shung Fie, Dip.Arch.(Melbourne), B.Arch.(Melbourne), Singapore 2, Malaya.
Tupman: Robert Corson, Edinburgh.
Van der Walt: Bernardus Rijks, B.Arch.(C.T.), Kitwe, Northern Rhodesia.
Warrilow: Dennis F., B.Arch.(Wales), Winnipeg 13, Manitoba, Canada.
Webster: David Herries, Dipl.Arch.(Northern Polytechnic).
Wheatley: Martyn James, Dipl.Arch.(Northern Polytechnic), Luton.
Williams: Thomas Cynwyd, Whiston.
Wilson: Peter Marsh, A.R.I.C.S., South Benfleet.
Woodward: John, B.A.(Cantab.), A.A.Dipl.
Yoong: Siew Cheong, Dip.Arch.(Auck.N.Z.), Petaling Jaya, Malaya.
Zwart: Wiebe Jilling, B.Arch.(Natal), Pretoria, South Africa.

ELECTION: 2 FEBRUARY 1960

An election of candidates for membership will take place on 2 February 1960. The names and addresses of the candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Saturday, 16 January 1960.

The names following the applicant's address are those of his proposers.

AS FELLOWS (7)

Davies: Eric, A.M.T.P.I. [*A* 1933], Shire Hall, Warwick; 33 Cloister Crofts, Leamington Spa. L. C. Lomas, C. H. Elkins, Arthur Ling.

Gregory: Patrick Brian, B.A.(Belfast) [*A* 1951], 5 Crescent Gardens, University Road, Belfast; 51 Rosetta Park, Belfast. Patrick B. Gregory, D. A. Shanks, R. S. Wilshere.

Jackson: Frank [*A* 1938], Schools' Architect, 22 Euston Road, Great Yarmouth, Norfolk; 26 Victoria Road, Gorleston. C. J. Tomkins, H. C. Boardman, Robert O. Bond.

Kelsey: Norman George [*A* 1945], 26 Kent Road, Southsea, Hants; 'Woodlands', Woodlands Avenue, Emsworth. John V. Nisbet, R. L. Reynish, Peter McG. Corsar.

Moore: John Edwin [*A* 1933], 23 Highbury Place, Highbury, N.5; 10 Litchfield Way, Hampstead Garden Suburb, N.W.11. Thos. E. Scott, Sidney F. Burley, H. Bramhill.

and the following Licentiates who are qualified under Section IV, Clause 4(*c*)(ii) of the Supplemental Charter of 1925:

Dancey: Cyril Vinson, Bleak House, Station Road, Gloucester; 17 Alexandra Road, Gloucester. Anthony M. Chitty, H. Stratton Davis, G. W. H. Ryland.

Pye: James Frederick, 4 Abbey Walk, Grimsby, Lincs.; Hill Rise, Laceby, Lincs. W. T. Buttrick, T. N. Cartwright, J. Gordon Woollatt.

AS ASSOCIATES (203)

The name of a school, or schools, after a candidate's name indicates the passing of a recognised course.

Adkins: Albert John, (Special Final), Quoin Cottage, The Green, Adderbury, Banbury, Oxon. Walter H. Clark, Orrell H. Nuttall, Guy Silk.

Ainscow: Terence Noel, (Final), 17 Branksome Avenue, Prestwich, Manchester. Cecil Stewart, David O. Searle, Francis Jones.

Allen: Henry Edward, (Final), Ship Hotel, Duke Street, Reading. Prof. J. S. Allen, Raglan Squire, G. J. Cuzens.

Andrews: Brian Rex, (Special Final), 11 Downsview Avenue, Woodingdean, Brighton 7. K. E. Black, F. F. Howard, Stavers H. Tiltman.

Auger: George Charles Boyd, B.Sc.(Lond.), A.M.I.C.E., (Final), 13 Ashburn Place, South Kensington, S.W.7. Edward D. Mills, R. H. Uren, J. Alan Slater.

Bailey: David William, (Final), 24 Delamere Drive, Macclesfield, Cheshire. Cecil Stewart, Denis Harper, W. C. Young.

Baldock: Alec John, Dipl.Arch.(Canterbury), (Canterbury Coll. of Art: Sch. of Arch.), 1 Sun Lane, Gravesend, Kent. J. K. Hicks, W. A. Cessford Ball, Emil C. Scherrer.

Barber: Charles Ernest, (Special Final), 'Landfall', 10 Weald Close, Weald, Sevenoaks, Kent. S. A. Hurden, Arthur H. Ley, L. C. Holbrook.

Barber: Robert Anthony, (Final), 'Silverwood', Lodge Road, Sundridge Park, Bromley, Kent. D. L. Bridgwater, Peter Shepheard, Thomas E. North.

Barnby: Clive, (Final), 12 St. Johns Avenue, Bridlington, E. Yorks. Francis F. Johnson, Allanson Hick, J. Konrad.

Barnes: Frederick Joseph Edward Charles, (Final), 615 Whitton Avenue West, Greenford, Middx. Ralph G. Covell, Francis C. Strahan, J. Kennedy-Hawkes.

Barnes: Geoffrey Alfred, (Special Final), 127 Bure Lane, Christchurch, Hants. Ronald A. Phillips, A. E. Geens, Miss Elisabeth Scott.

Bartleet: Stephen Timothy, A.A.Dipl. (Arch. Assoc. (London): Sch. of Arch.), c/o Kingsland School, Hartley, Plymouth. Arthur Korn, Arthur W. Kenyon, S. E. T. Cusdin.

Bartlett: John, A.A.Dipl. (Arch. Assoc. (London): Sch. of Arch.), 10a Beaconsfield Road, Clacton-on-Sea, Essex. Arthur Korn, M. H. Cooke-Yarborough, C. K. Capon.

Beales: Colin, (Final), 19 West Mall, Clifton, Bristol 8. John Collins, Albert H. Clarke, R. Towning Hill.

Bentham: Neil, (Final), 23 Beechfield Road, Smithills, Bolton, Lancs. R. Hermon Crook, R. M. McNaught, Cecil Stewart.

Berney: Keith, (Final), 36 Foredown Drive, Portslade, Sussex. K. E. Black, Oliver Law, Gordon Gillman.

Bound: Peter John, (Special Final), 'Highbury', Ashley Road, Farnborough, Hants. Cyril G. Pinfold, A. B. Waters, A. Llewellyn Smith.

Bousfield: Ernest John, (Special Final), 62 Cornmill Lane, Liversedge, Yorkshire. A. Vivian Banks, Stanley C. Punchard, Harold W. E. Lindo.

Bowden: Peter John, Dipl.Arch.(Canterbury), (Canterbury Coll. of Art: Sch. of Arch), 6 Cowper Road, Deal, Kent. Applying for nomination by the Council under Bye-law 3(*d*)

Boyd: Robert Burns, D.A.(Glas.), (Glasgow Sch. of Arch.), 'Kenilworth', 15 Avondale Drive, Paisley, Renfrewshire. F. Fielden, Ninian Johnston, A. D. Cordiner.

Braddock: Malcolm Ian, (Final), 37 Northgate Avenue, Macclesfield, Cheshire. Cecil Stewart, G. S. Hay, E. Sutcliffe.

Bradshaw: William Trevor, Dip.Arch.(Manchester), (Victoria Univ. Manchester: Sch. of Arch.), 7 St. David's Drive, Broxbourne, Hertfordshire. Prof. R. A. Cordingley, Eric S. Benson, Whitfield Lewis.

Brown: David Baker, (Final), 32 Chipper Lane, Salisbury, Wilts. T. H. B. Burrough, Robert Potter, J. H. Jacob.

Brown: Kennish John Holman, B.A.(Arch.) (Lond.), (Bartlett Sch. of Arch: Univ. of London), 32 Palace Gardens Terrace, W.8. Prof. H. O. Corfiato, R. C. White-Cooper, A. M. Foyle.

Brown: Walter Brook, (Special Final), 145 Malden Way, New Malden, Surrey. Thos. E. Scott, H. Winbourne, W. A. Sherrington.

Bruce: John Fyvie, (Final), 254 Union Street, Aberdeen. Douglas W. Innes, John Maclennan, E. F. Davies.

Buck: James Andrew, (Final), 'Hicadus', 11 Regent Road, Edgerton, Huddersfield, Yorks Norman Culley, S. M. Richmond, J. Gordon Berry.

Cameron: Duncan, (Final), 30 Beverley Gardens, Bangor, Co. Down, N. Ireland. Thomas S. Cordiner, T. J. Beveridge, William McCrea.

Campbell: Mostyn Fitz-Gerald, (Special Final), 5 Pretoria Road, Streatham, S.W.16. Paul Nightingale, Dr. R. Hertz, Arthur Korn.

Carlisle: Ronald Gilbert, D.A.(Glas.), (Glasgow Sch. of Arch.), 68 High Street, Lochwinnoch, Renfrewshire. F. Fielden, Ninian Johnston, A. D. Cordiner.

Chamberlain: Alan, (Final), 56 Reeves Avenue, Newcastle, Staffs. Donald C. Campbell, J. W. Plant, C. Knapper.

Chamberlayne: Derek, (Final), Catswood Cottage, Stancombe, nr. Stroud, Glos. H. Stratton Davis, Sefton S. Careless, Peter Falconer.

Chapman: William John Malcolm, (Final), 43 Florence Road, Brighton, Sussex. K. W. Farms, Peter L. Cocke, Mrs. M. F. Farms.

Chew: Thomas Walter, (Special Final), 618 Huddersfield Road, Wyke, Bradford, Yorks. E. D. Jordan, Eric Morley, W. C. Brown.

Child: Ronald, (Final), 4 Hartland Way, Lower Morden, Surrey. G. S. Rhodes, John S. Walkden, J. S. Foster.

Church: David Edward, Dipl.Arch.(Oxford), (Sch. of Tech. Art and Commerce, Oxford: Sch. of Arch.), St. James's Court, St. James's Gardens, W.11. Graham Dawbarn, F. T. Pritchard, Reginald Cave.

Clack: (Mrs.) Jennifer Anne, Dip.Arch.(The Polytechnic), (The Poly. Regent Street, London: Sch. of Arch.), Upper Highbury, The Common, Tunbridge Wells, Kent. John S. Walkden, A. R. Borrett, Clifford Culpin.

Clancy: Charles A., (Special Final), 52 Highfield Park, Dundrum Road, Dublin. Patrick John Munden, J. V. Downes, Vincent Kelly.

Comley: Edgar Thomas Patrick, (Special Final), 1 Meadowlands Avenue, Hampden Park, Eastbourne, Sussex. Robert H. W. Richardson, Ivan Williams, H. Hubbard Ford.

Cook: William Vincent, (Final), 9 Lichfield Street, Burton-on-Trent, Staffs. A. Douglas Jones, Reginald Edmonds, J. F. R. Gooding.

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Wood: Edmund Hugh, (Special Final), 'The Gables', Gresford, Wrexham, Denbighshire. H. Anthony Clarke, F. C. Roberts, and applying for nomination by the Council under Bye-law 3(*d*).

ELECTION: 5 APRIL 1960

An election of candidates for membership will take place on 5 April 1960. The names and addresses of the overseas candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Wednesday, 30 March 1960.
The names following the applicant's address are those of his proposers.

AS FELLOWS (5)

Baxter: James Russell, Dipl.Arch.(L'pool), Dip.T.P.(Edin.), A.M.T.P.I. [*A* 1934], P.O Box 610, Nechako P.S., Kitimat, B.C., Canada. Prof. Gordon Stephenson, J. H. Wade, Prof. Sir William Holford.

Dixon: Frank Horace Cedric [*A* 1949], P.O. Box 980, Windhoek, S.W. Africa. Prof. A. L. Meiring, W. A. Macdonald, Victor Heal.

Harvey: Kenneth Gordon, D.S.O., B.Arch. (Rand) [*A* 1952], 109 Eagle House, 10th Avenue, Abercorn Street, Bulawayo, Southern Rhodesia; 13 Holdengarde Avenue, Hillside, Bulawayo. R. C. Rinaldi, K. E. F. Gardiner and applying for nomination by the Council under Bye-law 3(*d*).

King: Kenneth Standish, A.A.Dipl. [*A* 1946], Box 1024, Express House, Kilindini Road, Mombasa, Kenya. Howard D. Archer, R. Q. Scammell, R. W. J. Pokinghorne.

Macdonald: Bruce, B.Arch.(Rand) [*A* 1954], Messrs. Rinaldi, Macdonald and Harvey, 318 Tanganyika House, Third Street, Salisbury, Southern Rhodesia; 'Hiawatha', Dorset Road, Avondale, Salisbury. R. C. Rinaldi, C. A. Knight, William F. Hendry.

AS ASSOCIATES (16)

The name of a school, or schools, after a candidate's name indicates the passing of a recognised course.

Alington: William Hildebrand, B.Arch.(Auck. N.Z.), M.Arch.(Illinois, U.S.A.), (Passed a qualifying exam. approved by the N.Z.I.A.), c/o Mr. E. H. Alington, MacArthur Street, Levin, New Zealand. Prof. Robert H. Matthew and the President and Hon. Secretary of the N.Z.I.A. under the provisons of Bye-law 3(*a*).

Bhuta: Bhupatrai Mohanlal, Dip.T.P.(Dunelm), (Final), School of Town and Country Planning, Indraprastha Estate, Indraprastha Road, New Delhi 1, India. T. J. Manickam, J. P. J. Bilimoria, J. R. Talpade.

Blore: Alfred Stewart, (Passed a qualifying exam. approved by the R.A.I.A.), 423 Main Road, Eltham, Victoria, Australia. Harry Winbush, Mrs. Hilary Lewis, Prof. Brian B. Lewis.

Boey: Hou Meng, B.Arch.(Melbourne), (Passed a qualifying exam. approved by the R.A.I.A.), 62 Monks Hill Terrace, Singapore 9, Malaya. Prof. Brian B. Lewis, Mrs. Hilary Lewis, R. G. Parker.

Chatterjee: Arun Kumar, (Final), 100 The Mall, Kamptee (Suburb of Nagpur), India. S. H. Parelkar, G. B. Mhatre, Homi N. Dallas.

Garratt: Brian, Dip.Arch.(Birm.), (Birmingham Sch. of Arch.), Apt. 4, 66 Hess Street South, Hamilton, Ontario, Canada. A. Douglas Jones, G. Alan G. Miller, J. F. R. Gooding.

Glenister. Dennis Alan, (Special Final), Architect's Department, Ministry of Works, P.O. Box 30043, Nairobi, Kenya. K. E. Black, Stavers H. Tiltman, H. Hubbard Ford.

Hunter: Walter Sime Frayne, A.P.T.C.(Arch.), (Passed a qualifying exam. approved by the R.A.I.A.), 29 McCallum Crescent, Applecross, Western Australia. K. C. Duncan, Marshall Clifton, Alex. B. Winning.

Lamb: Shen Chuen, B.Arch.(Manitoba), (Univ. of Manitoba, Winnipeg, Canada: Sch. of Arch.), 1225 16A Street, N.W., Calgary, Alberta, Canada. Applying for nomination by the Council under Bye-law 3(*d*).

Modak: Keshav Vaman, (Final), 19 Shivniwas, T.P. Road, Matunga, Bombay 16, India. S. H. Parelkar, G. B. Mhatre, Homi N. Dallas.

Moore: Paul Stanley, B.Arch.(N.U.I. Dublin), (Univ. Coll. Dublin, Ireland: Sch. of Arch.), Messrs. W. H. Watkins and Partners, P.O. Box 408, Bridgetown, Barbados, British West Indies. Fraser Reekie, W. H. Watkins, A. S. Gray.

Paterson: Ronald Oglivy, (Passed a qualifying exam. approved by the N.Z.I.A.), 13 Arawa Street, Birkenhead, Auckland, N.5, New Zealand. Prof. A. Charles Light and the President and Hon. Secretary of the N.Z.I.A. under the provisions of Bye-law 3(*a*).

Swanson: Swan Douglas, Dip.Arch.(Adelaide), (Passed a qualifying exam. approved by the R.A.I.A.), 19 Sunnyside Road, St. Georges, South Australia. L. G. Bruer, L. Laybourne Smith, Gavin Walkley.

Tio: (Miss) Gladys Phaik Keow, Dipl.Arch. (U.C.L.), (Bartlett Sch. of Arch.: Univ. of London), 67 Khaw Sim Bee Road, Penang, Malaya. Prof. H. O. Corfiato, R. C. White-Cooper, Arthur M. Foyle.

Wyman: Laurence John, Dip.Arch.(Adelaide), (Passed a qualifying exam. approved by the R.A.I.A.), c/o Messrs. Cheesman, Doley, Brabham and Neighbour, 3 Penola Road, Mount Gambier, South Australia. J. D. Cheesman, Gavin Walkley, Walter J. M. Sedgley.

Zubas: Peter Vytautas, (Special Final), 555 Gerald Street, LaSalle, Montreal, Que., Canada. Applying for nomination by the Council under Bye-law 3(*d*).

Members' Column

This column is reserved for notices of changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. Michael Barnard [*A*], has been appointed Assistant, Department of Architecture, Bournemouth Municipal College of Art, St. Stephen's Hall, Braidley Road, Bournemouth.

Mr. Harry Parsons [*A*] is now working as an architect/town planner for the Central Mortgage and Housing Corporation in Ottawa and his address is 865 Glasgow Crescent, Ottawa, Ontario, Canada.

Mr. Robert M. Stokes [*A*] has accepted an appointment under **Professor Arne Jacobsen** in Copenhagen. His new address will be c/o Arne Jacobsens Tegnestue, Strandvej 413, Klampenborg, Copenhagen, Denmark.

Mr. R. T. Walters, A.M.I.Struct.E. [*A*], has left the Eastern Region of British Railways, and has joined the Directorate of Works at the War Office as Chief Architect (Development).

PRACTICES AND PARTNERSHIPS

Mr. Basil W. Adlam [*A*] has joined **Messrs. Piper and Whalley** [*A*] in partnership under the style of **Messrs. Piper, Whalley and Partners** at 88 Thorpe Road, Norwich and also at 5 Earsham Street, Bungay; 1 Regent Road, Lowestoft and 1 Rawstorn Road, Colchester.

Messrs. Beard, Bennett, Wilkins and Partners [*F*/*A*/*L*] of 101–3 Baker Street, London, W.1. have taken **Mr. G. A. Askew** [*A*], **Mr. A. Cook** [*A*], **Mr. K. A. Moore** and **Mr. D. V. Thornton** [*A*] into partnership. The name of the firm will remain unchanged.

Mr. Alexander Beckingsale [*L*] has taken **Mr. Robert Forman** [*A*] and **Mr. Roger Mortimer** [*A*] into partnership under the style of **Alexander Beckingsale and Partners.** The practice will continue to be conducted from 36 Whiteladies Road, Clifton, Bristol 8 (Bristol 36762 and 35826).

Mr. G. M. Boon [*F*], Chief Architect to the Lotus Group of Companies, is taking **Mr. E. K. Parker** [*A*] into partnership in private practice under the name of **Boon and Parker.** Their temporary address is 20 Sandon Road, Stafford.

Mr. Noel Campbell [*F*] has resigned his position as County Education Architect to the Londonderry County Council to go into private practice with his father-in-law **Mr. Crofton G. Dalzell** and would be glad to receive all future correspondence at Northern Bank Buildings, Coleraine, Northern Ireland.

Mr. Fred Greenwood [*A*] has taken **Mr. Kenneth A. Stott** [*A*] into partnership. The style of the firm will remain **Fred Greenwood** at 18 The Green, Richmond, Surrey.

Mr. J. H. Lowe [*L*] is practising at 16 High Street, Abingdon, Berks (Abingdon 1331).

Dr. Abe Luntz [*A*] has commenced practice at the Moorabbui Medical Clinic, 326 South Road, Moorabbui, Victoria, Australia (XLO 488).

Mr. James A. H. Mottram [*A*] and **Mr. Thomas E. Patrick** [*A*] have taken **Mr. A. Martin Dalgleish** [*A*] into partnership. They will now practise under the title of **Mottram, Patrick and Dalgleish** at 14 Frederick Street, Edinburgh (Cal 4139).

Mr. Eamonn Murphy [*A*] has commenced private practice at 13 St. Stephen's Green, Dublin, Ireland, where he will be pleased to receive trade literature.

Mr. Ray J. H. Nathaniels [*F*] is now practising in Nassau and his address is Alaric House, Cumberland Street, Nassau, c/o Box 357, Nassau, Bahamas.

Messrs. Richard Pickles and Partner of 1 Harrison Road, Halifax have acquired the practice of **Messrs. Sharp and Waller** of 32 Bradford Road, Brighouse. The style of the firm will in future be known as **Messrs. Richard Pickles and Partner** [*AA*] (incorporating **Messrs. Sharp and Waller**).

Mr. Ronald P. Radley [*A*] has started practice on his own account at 189–191 Stanstead Road, Forest Hill, S.E.23, where he will be pleased to receive trade literature and catalogues.

Mr. Derek J. Smart [*A*] is now practising on his own account at 784 Hagley Road West, Birmingham 32 (Woodgate 5411 and 5691), where he will be pleased to receive trade catalogues.

Mr. Norman Starrett [*A*] has started private practice at 269 King Street, London, W.6. At the same address a London office has been set up by **Design Group Nigeria** (Mr. A. M. D. Halliday [*A*] and Mr. D. M. Webster [*A*]), whose main office is in Ibadan, Nigeria. Mr. Starrett will be pleased to receive trade literature.

Mr. W. J. Carpenter Turner [*A*] has taken into partnership **Mr. Charles Burford** [*A*], of London, and they will practise as **Carpenter Turner and Burford** at Minster Chambers, Great Minster Street, Winchester (Winchester 4233).

Mr. D. Tennyson Waters [*A*] has joined in partnership with **Messrs. W. H. Saunders and Son** [*A*/*L*], under the style of **W. H. Saunders, Son and Waters** at their new London premises at 53 Goodge Street, W.1 (Langham 9908–9). The practices in Southampton, Portsmouth, Coventry and Gosport remain unchanged under the style of **W. H. Saunders and Son.**

Mr. Gilbert Yeates [*A*] has taken over the practice of the late **Mr. Benjamin Waterhouse** [*F*] at 134 Deansgate, Manchester 3. The practice will be continued under the style of **Benjamin Waterhouse and Company.**

CHANGES OF ADDRESS

Messrs. Barnes, Challen and Cross [*F*/*L*] have changed their address to 74 Gloucester Place, W.1 (Welbeck 0297).

Mr. Patrick A. Bartlett [*A*] has changed his address to 87 Holden Road, Finchley, London, N.12.

Mr. James A. M. Bell [*A*] has changed his address to Half Acre Green, Manchester Road, Wilmslow, Cheshire.

Mr. P. V. Binnington [*A*] has changed his address to 30 Stanhope Road, London, N.6.

Mr. Charles Blake [*A*] practising in association with Mr. J. E. Knapman and Mr. S. Jampel, has opened a branch office at Martins Bank Chambers, Victoria Street, Paignton, S. Devon. Trade literature should still be sent to Phoenix Chambers, 553 Babbacombe Road, Torquay.

Mr. John J. Bolton [*A*] has changed his address to 2134 Berwick Avenue, Bel Air Park, Ottawa, Ontario, Canada.

Mr. Alan S. Craig [*A*] has changed his address to 53 Hill Rise, Rickmansworth, Hertfordshire (Rickmansworth 3982).

Mr. Donald P. M. Goldie [*A*] has changed his address to 14 Alderson Road, Harrogate, Yorkshire.

Mr. G. B. Graham Smith [*A*] has changed his address to c/o Central Mortgage and Housing Corporation, Head Office, Montreal Road, Ottawa, Ontario, Canada.

Mr. H. M. Hughes [*A*] has changed his address to 80 Brickhill Drive, Bedford.

Mr. S. P. Jordan [*A*] has changed his address to 22 Queen's Gate Gardens, London, S.W.7. (Knightsbridge 8418). Representatives by appointment only.

Mr. James Lewis [*A*] has changed his address to 8 London Road, Rickmansworth, Hertfordshire.

Mr. Dennis S. Lichtig [*A*] has acquired new offices at 14 Smarts Lane, Loughton, Essex. The practice will also continue at 24 Spareleaze Hill, Loughton (Loughton 5864), where all communications should be addressed.

Mr. John Lloyd [*A*] has changed his address to 13 Cairnside, East Herrington, near Sunderland, County Durham.

Mr. C. W. Lowe [*F*] has changed his address to 7 St. Thomas Street, London Bridge, S.E.1 (Hop 2235).

Messrs. W. H. McAlister, John Mather and Partners [*AA*] have now moved their Londonderry office to 9 Ferryquay Street; **Mr. J. A. Armstrong** [*A*] is the partner in charge and he will be glad to receive trade catalogues.

Mrs. Valerie Matthews [*A*] has changed her address to 8 Duke Street, Edinburgh 1, where she will be pleased to receive trade literature in connection with housing.

Mr. Robert P. Nicholls [*A*] has changed his address to Colonel By Towers, Apartment 618, Ottawa, Ontario, Canada (Central 4–7846).

Mr. G. P. Parkman [*A*] has changed his address to 14 St. Elizabeth's Avenue, Bitterne, Southampton.

Mr. A. Ray-Jones [*A*] has changed his address to The Berries, Farm Lane, Leckhampton, Cheltenham, Gloucestershire.

Mr. R. Michael Rostron [*A*] has changed his address to 16 Cranes Park, Surbiton, Surrey, where he will be pleased to receive trade literature about furniture, fabrics, fittings, finishes and other materials suitable for interiors.

Kenneth Scott Associates [*AA*] have moved their London office to 81 Wimpole Street, London, W.1. The address of their Accra office in Ghana remains unchanged.

Mr. Geoffrey Shires [*A*] has changed his address to 69 Walton Street, Chelsea, S.W.3 (Knightsbridge 8677) where he will be pleased to receive trade catalogues.

Mr. Gerald R. Smith [*A*] has changed his address to Belfast Bank Chambers, Main Street, Larne (Larne 2737).

The present address of **Mr. Peter Stubbs** [*A*] is Yacht 'Frolic', Robinson Road, Newhaven, Sussex. The 'Frolic' will remain at Newhaven until August 1960.

Mr. G. J. W. Thomas [*A*] has moved his practice to 11A St. Mary's Gate, Derby (Derby 42046), and he will be pleased to receive trade literature.

The West Indies Design Group have opened a branch office at 15 Pineapple Place, Ocho Rios, Jamaica, B.W.I., where they will be pleased to receive trade literature. The main office remains at 12 Renfrew Road, Kingston 10, Jamaica.

The business address of **Mr. Wystan Widdows** [*L*] is Nicholas Building, 37 Swanston Street, Melbourne, C.I., Australia (MF 2906).

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Associate (36), 12 years' experience London and Canada, car owner, seeks partnership or position leading thereto in Southampton area. Some capital available. Box 99, c/o Secretary, R.I.B.A.

Practice or partnership with gradual retirement of principal wanted in an established practice in London or East Anglia, by Associate, A.M.P.T.I. (34). Wide experience in all phases of design and construction at home and abroad. Capital and some contacts available. Box 100, c/o Secretary, R.I.B.A.

West Riding. Small but rapidly expanding practice, mainly school and church work, requires assistant architect, with a view to partnership. Keen worker with ability and sufficient experience in design and management. Progressive outlook and good presence essential. Capital and connections not essential. Box 101, c/o Secretary, R.I.B.A.

Architect (40), keen to practise in the south-west or south of England would like to buy an established practice outright, and in order to preserve goodwill would prefer a partnership arrangement with the vendor for a period of several months after purchase. Box 103, c/o Secretary, R.I.B.A.

Fellow (early fifties), owing to death of partner, wishes to contact other younger architect or architects with own practice to discuss partnership in West End of London. Has considerable experience of domestic, hospital and laboratory work. Small amount of capital available. Box 104, c/o Secretary, R.I.B.A.

Old, established and progressive firm of West Riding architects wish to contact similar firm in the Midlands with a view to amalgamation, basically to expand the scope of both practices, or would consider buying practice where existing partner is contemplating retirement. All communications will be kept strictly in confidence. Box 105, c/o Secretary, R.I.B.A.

Member with small practice in London, good connections and work in progress seeks partnership in larger firm. Capital available. Box 106, c/o Secretary, R.I.B.A.

ACCOMMODATION

Member requires office accommodation in London of 300 to 400 square feet consisting of 2 or 3 rooms. Preferably West or West Central districts. Box 107, c/o Secretary, R.I.B.A.

MISCELLANEOUS

A study group to examine the problems in tropical building and architecture has been formed at Birmingham School of Architecture, and catalogues and technical information relevant to these problems would be gratefully received. They should be addressed to Mr. D. Kirby, Birmingham School of Architecture, College of Art and Crafts, Margaret Street, Birmingham 3.

Widow of Member has for disposal complete set of R.I.B.A. Journals from January 1951 to December 1958. Box 102, c/o Secretary, R.I.B.A.

The Royal Institute of British Architects, as a body, is not responsible for statements made or opinions expressed in the JOURNAL.

A.B.S. Symbol Competition

ONE HUNDRED AND TWENTY entries were submitted for this competition and these were judged by Prof. Sir Leslie Martin, M.A., Ph.D.(Man.) [*F*] E. Paolozzi, Esq., and W. G. Howell, Esq., D.F.C., M.A.Cantab., A.A.Dipl., After much deliberation they awarded the following prizes:

1st Prize of 25*gns.* to Mr. G. Stephen Crossley, 11 Hillbrook Road, Bramhall, Cheshire.

2nd Prize of 15*gns.* to Mr. Brian Whateley [*A*], 270 Pershore Road, Edgbaston, Birmingham 5.

3rd Prize of 10*gns.* to Mr. J. K. Quirk, 56 Cockburn Street, Pingle, Liverpool 8.

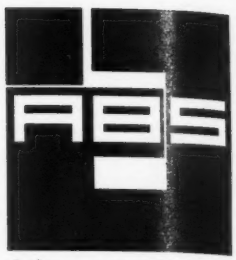
Thirty-seven other entries were selected for showing at the A.B.S. Ball on 9 December.

The Assessors made the following comments on the entries:

We felt that the principle criterion for judging a design was whether or not it was a successful symbol; this seemed a more important qualification than whether or not it contained the letters A.B.S. either in an obvious or a partly hidden form. The device will very seldom appear unsupported by the name of the Society in full, as its principle use will be on writing paper and publications. It also seemed important to us that the device should give flexibility to a typographer to use it in a variety of different sizes and situations.

A very large proportion of the entries consisted of the letters by themselves in almost every imaginable permutation, sometimes surrounded with a border of some kind. These entries covered almost every phase in the development of graphic art over the last 60 or so years and most of them failed to build up into any kind of a symbol. A high proportion placed an inappropriate stress on one or other of the three initials. There was also a tendency to use lower case letters (without, of course, fullstops, these being typographically at a discount these days) and in these cases the word 'abs' tended to jump out at the reader. A number of entries went in for overt, somewhat literary symbolism—T-squares, pediments and in many cases (most unfortunately in our view) a poised open hand.

1ST PRIZE. This design seemed to us to be a very successful symbol, which could become familiar to those who know of the Society, would give flexibility in use to a typographer and would look well in a variety of sizes and situations. The design has overtones of a Chinese seal and it was felt that this was in its favour as this kind of symbol is used typographically somewhat as a seal was used in the past. The rather high degree of manipulation of the letters has led to a slight degree of ambiguity in the case of letter 'B', although the others are plain enough, but we feel that legibility is not a fundamental issue and that the somewhat cryptographic nature of the initials suppressed in the interest of creating an intriguing and highly disciplined design was justifiable. We feel that this device will look well in the positive version or in reverse, and with its large blank areas would lend itself to translation into a mechanical tint. It would look very well printed in a colour, and would lend itself to being used in repetition for display purposes.

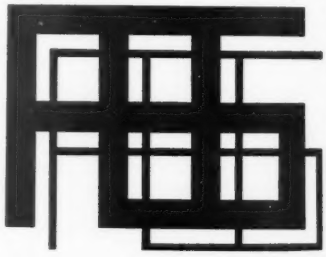


1st

2ND PRIZE. This design was one of the most successful of those using the intials more or less straight. We felt that the surrounding device succeeded in making the whole design into a coherent symbol despite the tendency of the lower case letters to coagulate into a word. The drawing-board overtones of the surrounding shape were felt to be cleverly contrived without being too obvious.

2nd

3RD PRIZE. This design represents the limit of manipulation of the letters to form a cryptographic device and one would undoubtedly have to know the initials of the Society before they could be deduced from the symbol. As we have stated this is not looked upon as being a fundamental draw-back and in this case the designer has certainly succeeded in using the letters in a highly ingenious manner. This design could become a recognisable symbol although in our opinion less successfully than the one placed first.



3rd

A.B.S. 'Dustbin of Nails' Competition

The Nails in the Dustbin were very kindly counted in three sections by the following firms of Quantity Surveyors:

Messrs. C. E. Ball & Partners, Fitzroy Square.
Messrs. Dearle & Henderson, Victoria Street.
Messrs. Rider Hunt & Partners, Blackfriars.

The total number of nails in the dustbin was 45,289.

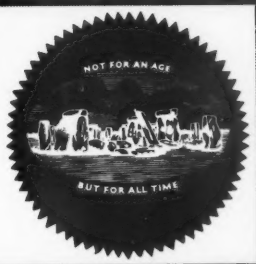
The nearest calculation was received from Mr. W. V. Morgan of 1 Herbert Avenue, Risca, Newport, Monmouthshire, who calculated 45,298, and who will receive the Enterprise Dinghy. A gift voucher for £75 will be sent to Miss Pauline Witten, 16 Shaneen Park, Belfast, who calculated 45,277, and the voucher for £30 will be sent to Mr. R. N. Turner, 8 Castlefields Drive, Charlton Kings, Cheltenham, who calculated 45,267. The other prizes enumerated in the leaflet will be distributed to the competitors calculating the next nearest numbers.

Complete retiling in ten days...

When Marley recently re-roofed the Bank House Hotel at Grayshott, the complete job—including all scaffolding work—took only ten days.

A total of 19,950 Marley cross-camber, red-and-black mottled plain tiles on battens replaced the sixty-years-old Staffordshire tiles which had been nailed direct to the close boarded roof. Marley valley tiles were also fixed to the main roof slopes.

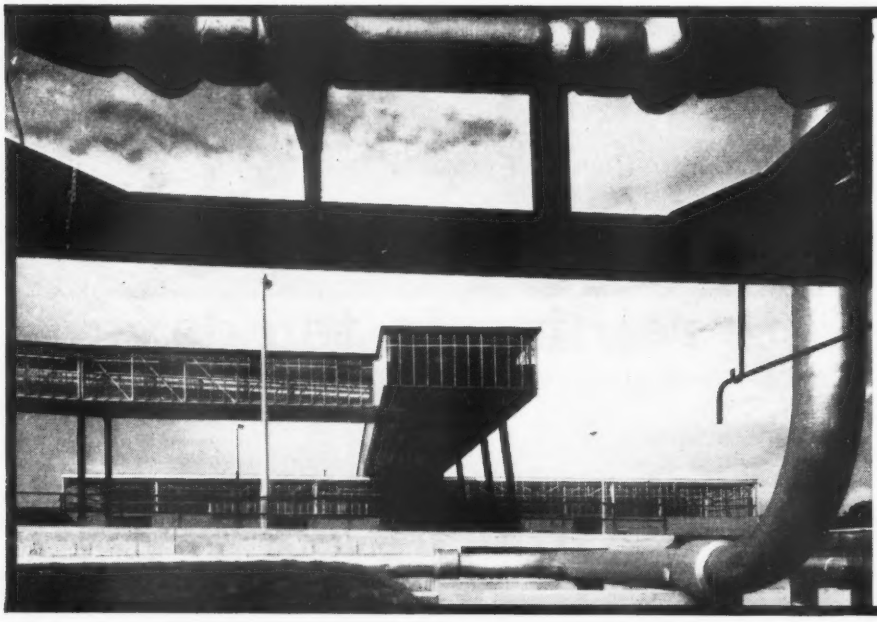
MARLEY Sevenoaks Kent · Sevenoaks 55255
London showrooms:
251 Tottenham Court Road W1



All Marley roof tiles are covered by the Marley dual guarantee:

1. That Marley tiles will not laminate or decay for 50 years.
2. When fixed by Marley craftsmen, they will be maintained free for 10 years.

patent glazing is like windows only BIGGER and often it's IN THE ROOF and it doesn't have PUTTY



The new Heinz factory at Wigan is the largest factory to be built in Britain since the war. Shown here is the ancillary can factory, clad in Williams & Williams "Aluminex" vertical patent glazing. The continuous opening lights are gear-operated to give critical control of ventilation.

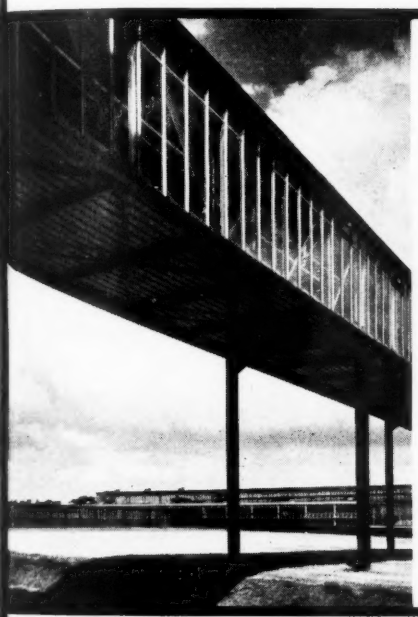
Architects:
J. Douglass Mathews and Partners, London in association with Skidmore, Owings and Merrill, New York.

The new Heinz factory is turning depressed Wigan into a boom area. By the time it is in full production it will be employing some 3,000 local people and taking up a good deal of the local agricultural produce, which is both abundant and high in quality.

The 127-acre site has a gradient of 1 in 40 which has been exploited to give the factory two working levels—both accessible to lorries. Manufacture starts on the upper

level with unloading, storage, preparation and cooking. Products are then gravity fed to the lower level for can filling, sterilization, packing, warehousing and finally dispatch.

The presence of old coal mines underneath the site meant careful positioning of the component buildings. The can factory is therefore at some distance from the food production unit and is linked to it by a service gantry which feeds the finished cans into the appropriate stage of production process.



WILLIAMS & WILLIAMS ALUMINEX SIDEWALL GLAZING HAS BEEN USED TO CLAD

the service gantry which takes finished cans across to the main factory for filling

and the covered footway connecting the two factories.

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illiams & Williams make steel windows of every description, ALOMEGA and other aluminium windows, movable el and glass partitioning, ALUMINEX patent glazing, WALLSPAN curtain walling and many other products, all of ich can be seen at our permanent window exhibition at No. 36, High Holborn, London, W.C.1.

LLIAMS & WILLIAMS. RELIANCE WORKS. CHESTER · WILLIAMS HOUSE. 37-39 HIGH HOLBORN. LONDON W.C.1

the importance of

ANDEK *roofing . . .*

Regent Axle Co. Ltd., Burnley.
Architects : Houston and Forbes, F.R.I.C.S. A.R.I.B.A.

. . . to this building is —

- A firm and solid roof giving flexibility in design.
- Good standard of fire resistance.
- High degree of insulation - continuous over supports - to prevent heat losses and to minimise condensation. U=0.21.
- Attractive soffit - good acoustic value from open texture wood wool.
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JN/A.88

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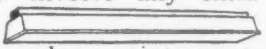
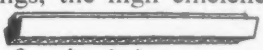
The varying lighting needs of office, works or showrooms *need not now* involve any extra expense on different fittings,  special installations or complex maintenance. With only the one basic fitting of **atlas atlantic** you can achieve the right light for every department, by a simple interchange of standard units. Create an attractive, *integrated* lighting system through the whole premises, at the same time increase efficiency and lower costs.

The flexibility of the **atlas atlantic** range extends even further. Alter the functions of floor space at any time, and you need change only reflectors and diffusers to fit the new lighting demands . . . from a robust, functional fitting for stockrooms, to a superb boardroom fitting with decorative diffuser.

The unique features of the chassis, the quality and appearance of the fittings, the high efficiency of the fluorescent light,  and the very wide range of units bring you a new concept of low-cost lighting.

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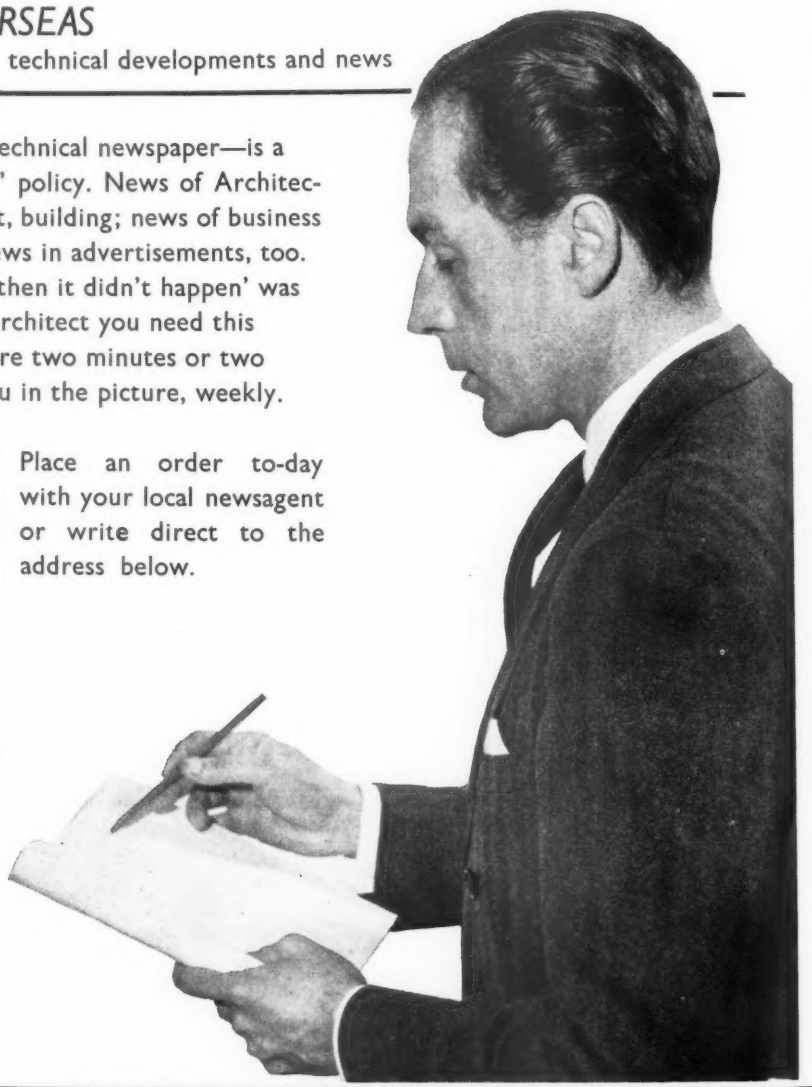

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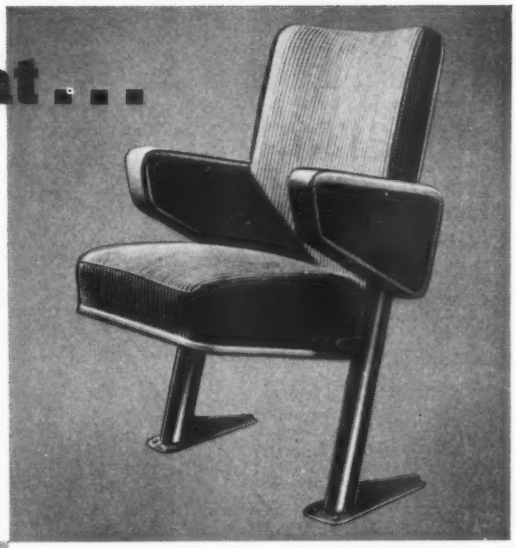

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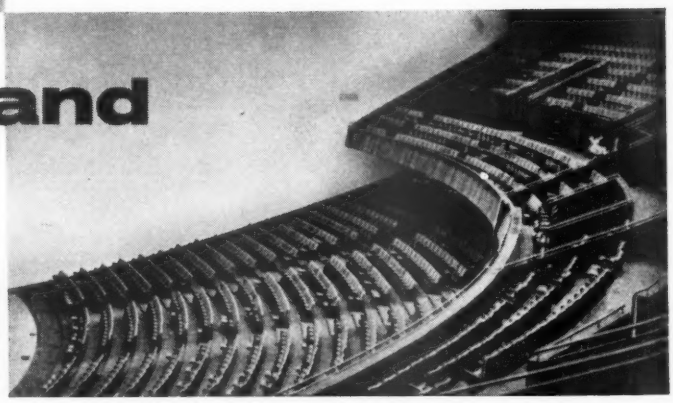

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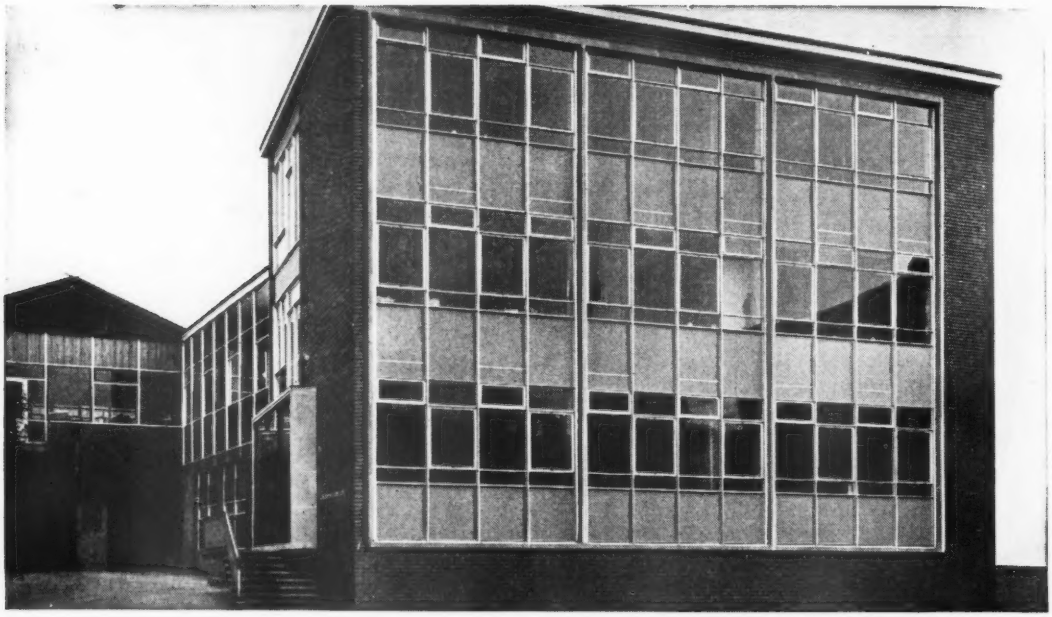

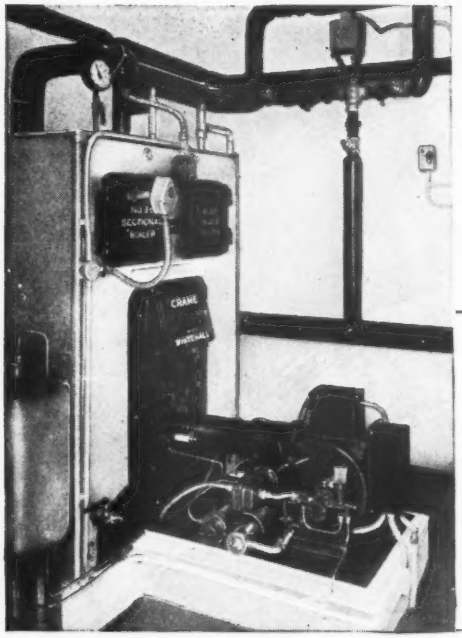

ONCE AGAIN BOILER BY CRANE

G. N. Haden & Sons Ltd., the well-known firm of Heating Engineers, have recently moved into new premises at Bristol which include design drawing offices and workshops. It was no accident that for heating of the building, they specified the Crane Whitehall Boiler, choosing it for its reliability, efficiency and good finish. A 634,000 B.t.u., No.39L Whitehall Sectional Heating Boiler, burning oil, has been installed.

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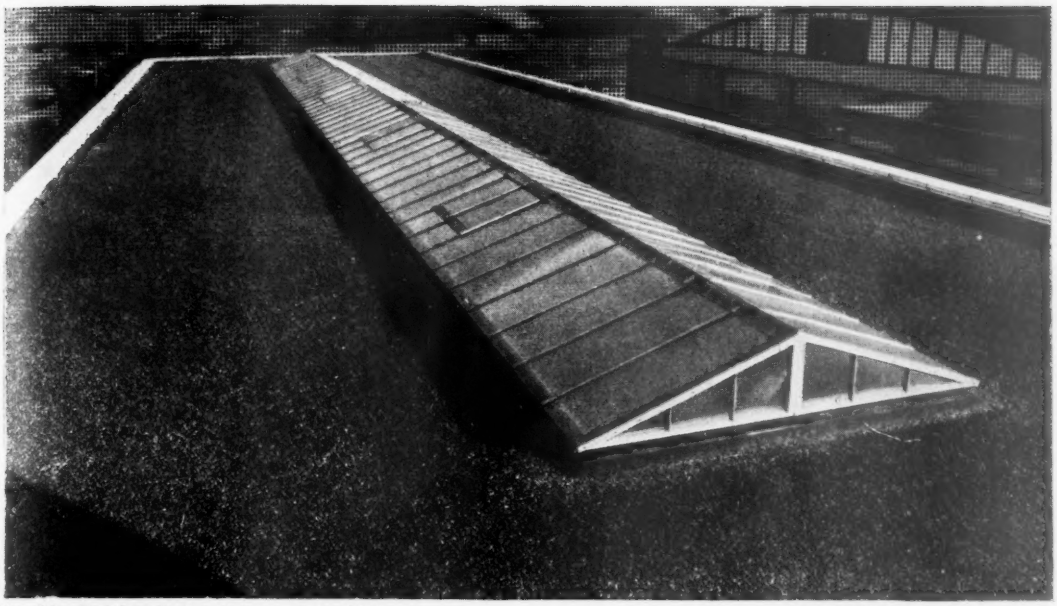
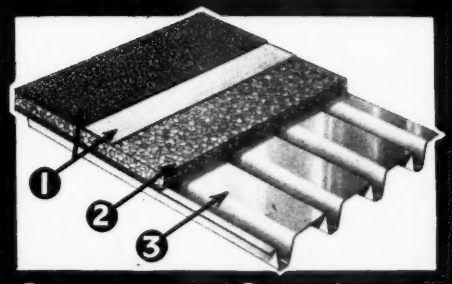


New Office Block for Rolls Royce Ltd., Aero Engine Division, Hucknall, Nr. Nottingham.

ARCHITECTS' DEPT., Rolls Royce Ltd.

ROLLS-ROYCE Specify BITUMETAL



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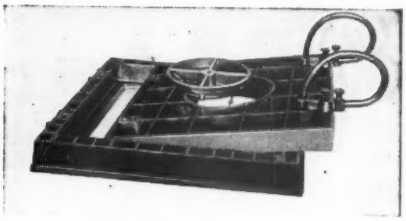
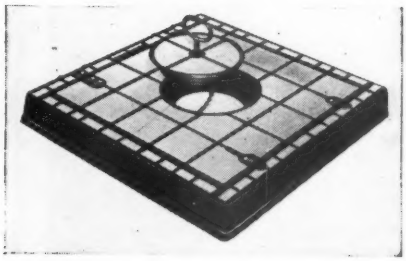
A NEW ELKINGTON Gatic TECHNICAL FOLDER ON COVERS & FRAMES FOR GARAGES

AND PETROL STATIONS





Every Council throughout the country has had a copy of this new folder on the Elkington Gatic Cover and Frame for Garages. It has been very favourably received. This cover has been developed for specific use over filling and dipping points to underground petroleum storage tanks. The seatings of the cover, both horizontal and vertical, are in continuous metal to metal contact with their respective frame seatings. A smear of grease on these seatings provides a watertight seal when properly set and maintained. As this design of the Elkington Gatic cover is watertight it removes the necessity of setting the cover proud of the surrounding surface, enabling it to be set flush with the carriageway.

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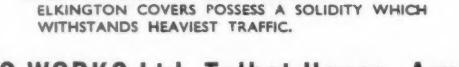

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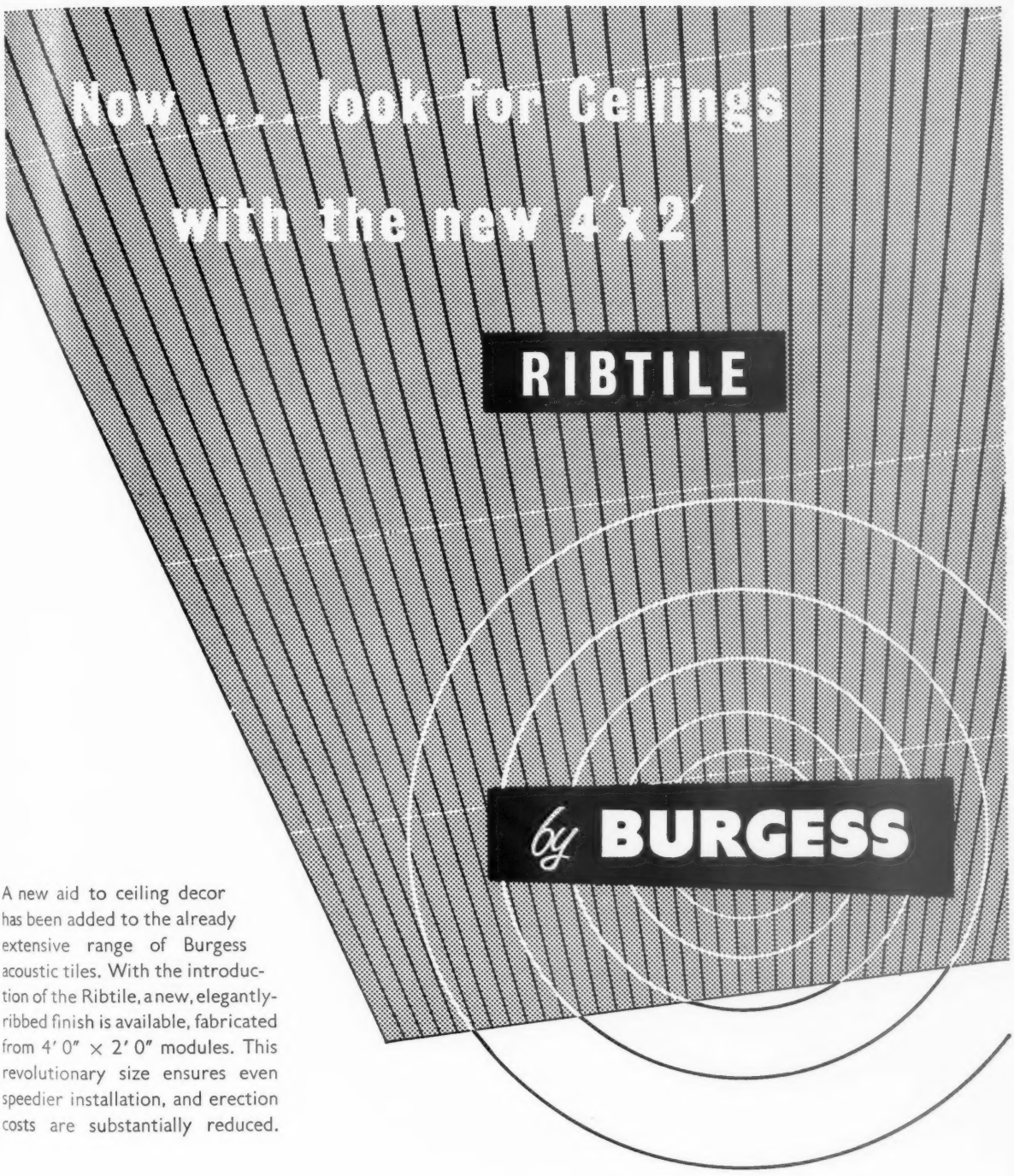

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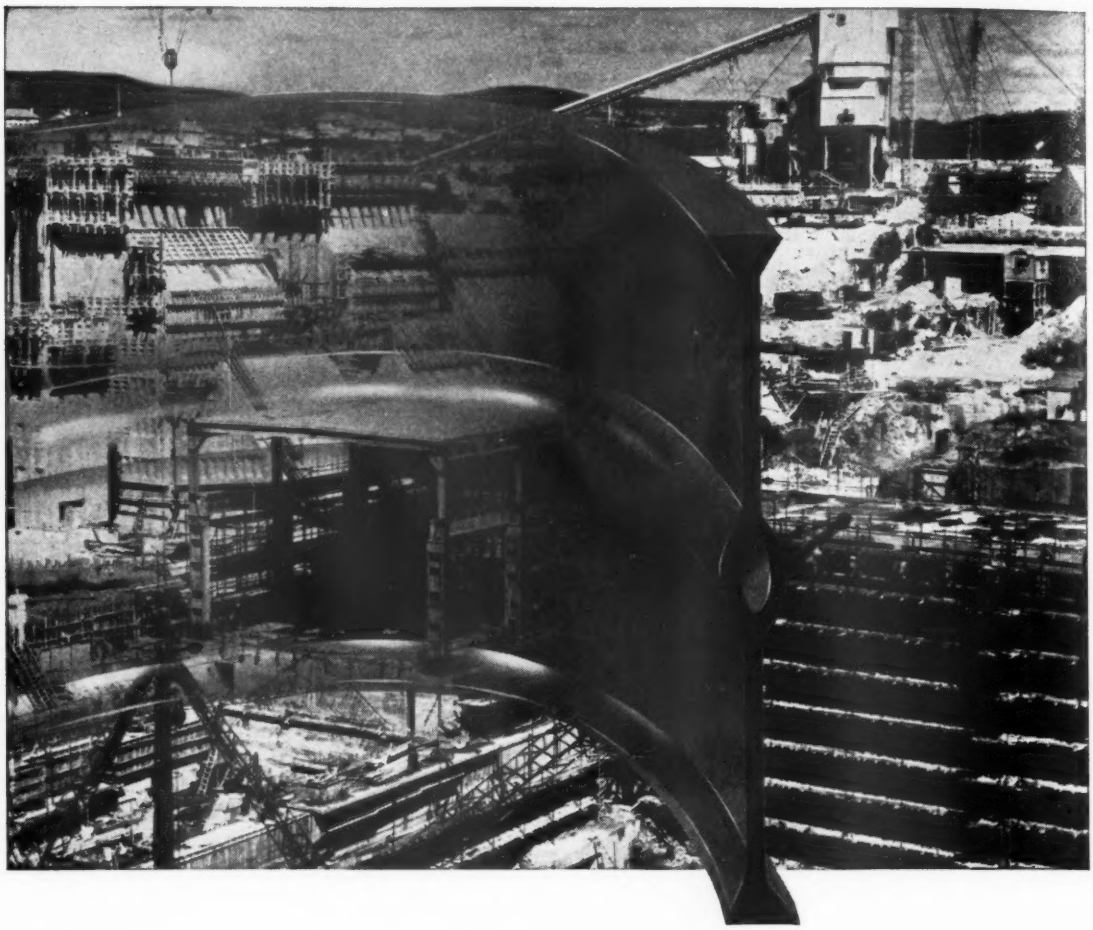

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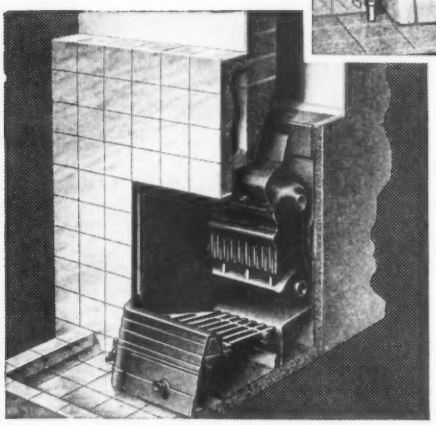
IDEAL NEOFIRE No. 2C

IDEAL NEOFIRE No. 10

British Patent No. 753719



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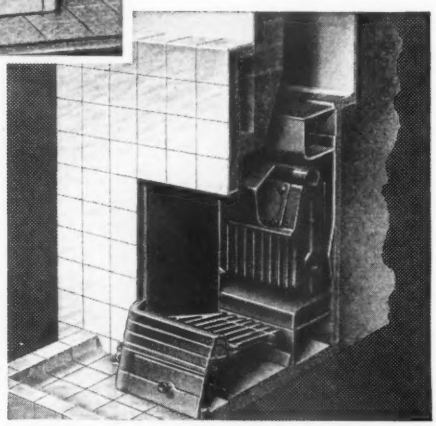

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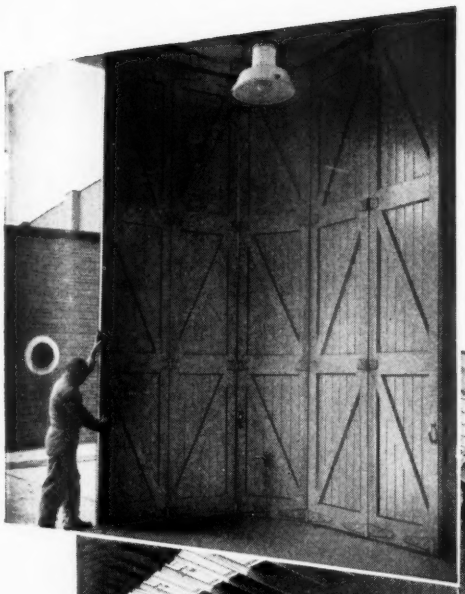

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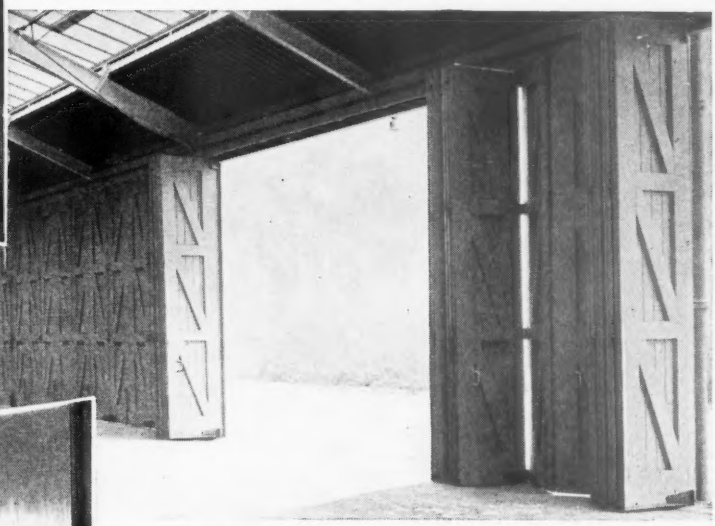

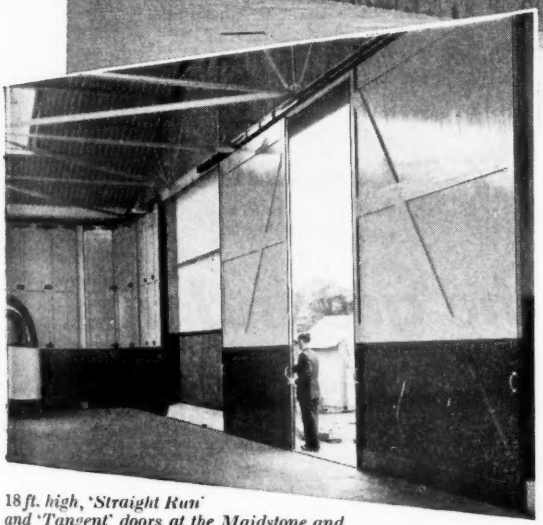

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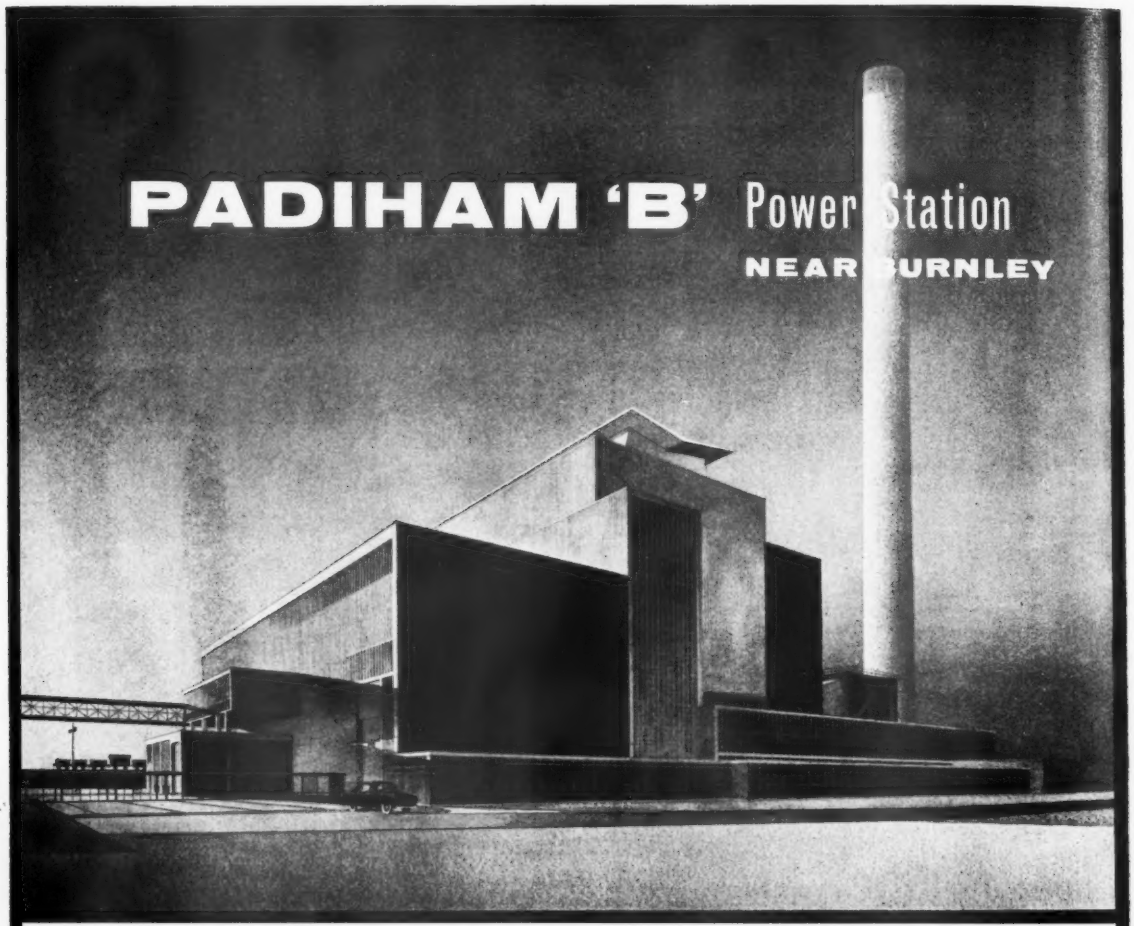

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TYPICAL USES — Flooring; furniture; dowels.

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TYPICAL USES — Flooring; furniture; interior trim; ladder rungs.

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TYPICAL USES — Furniture; patterns and models; picture frames.

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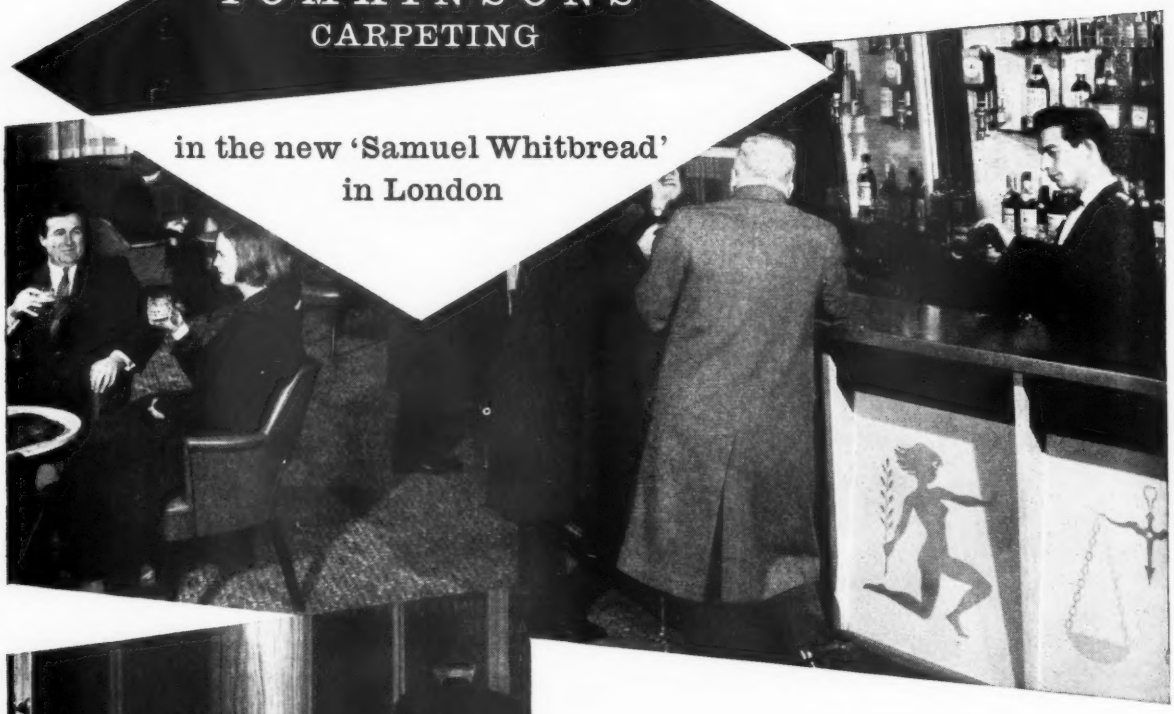

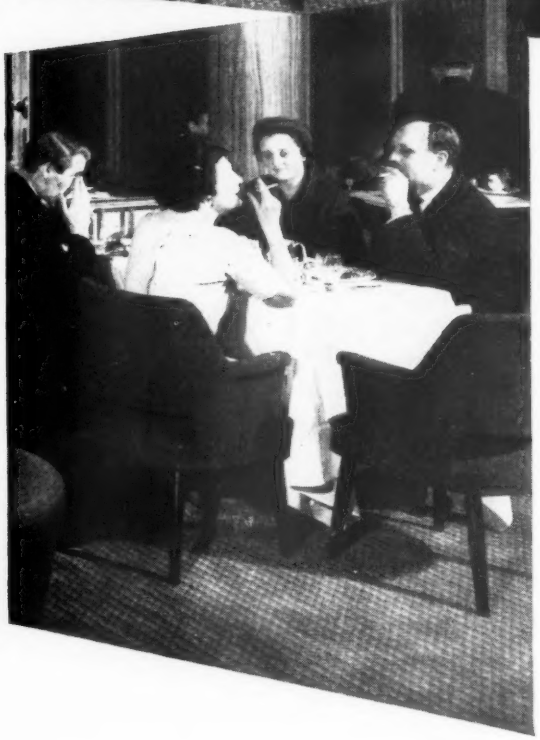

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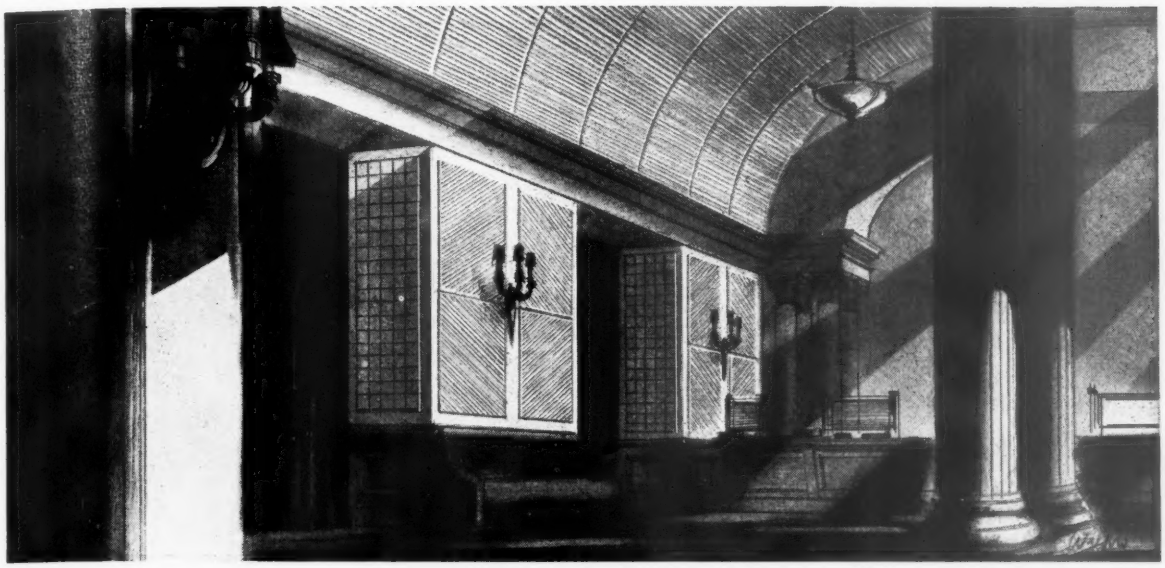

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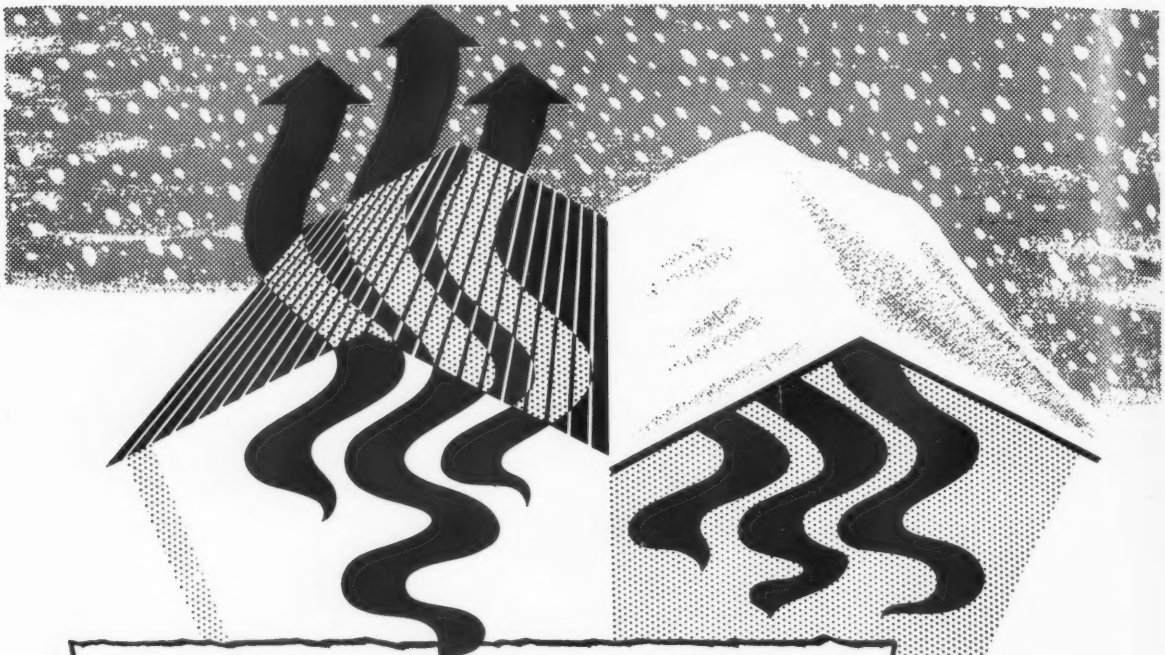

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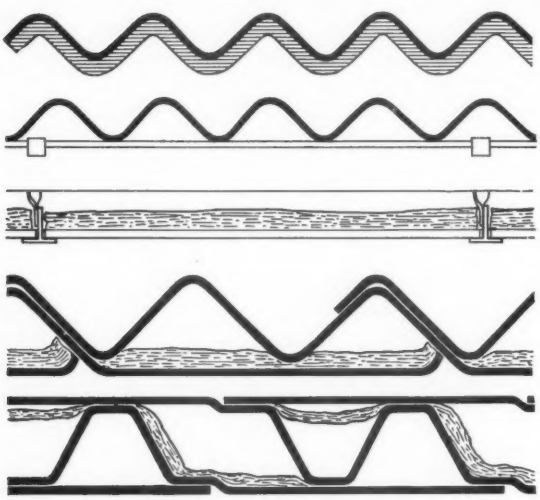

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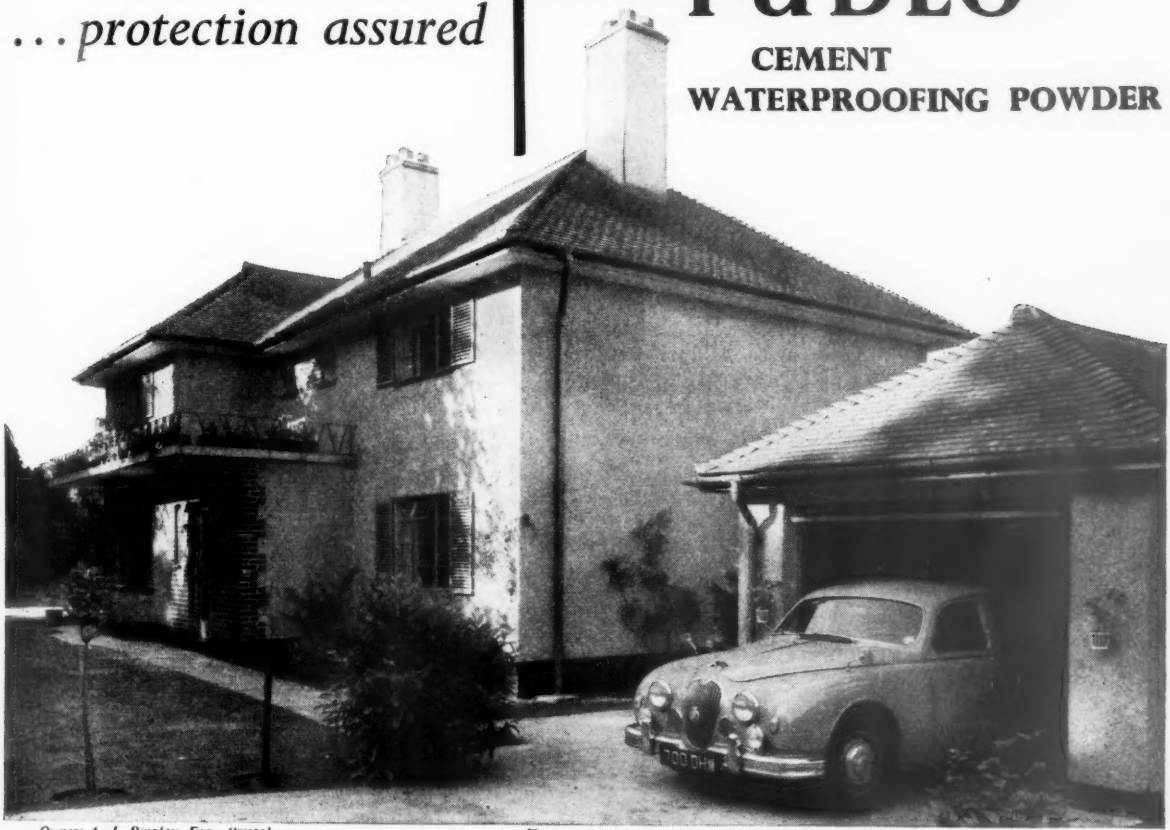

Owner: A. J. Bingley, Esq., Bristol
Architect: Major G. Raymond Morgan, F.I.A.A., F.I.A.S. etc

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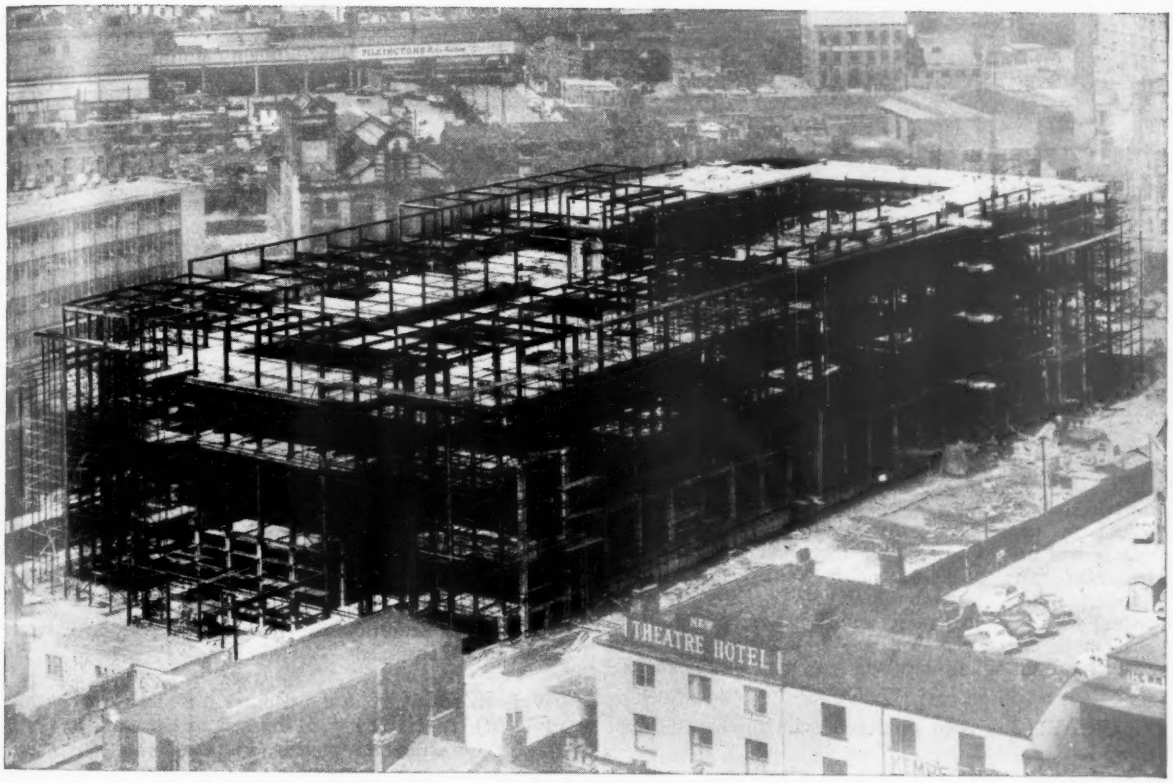

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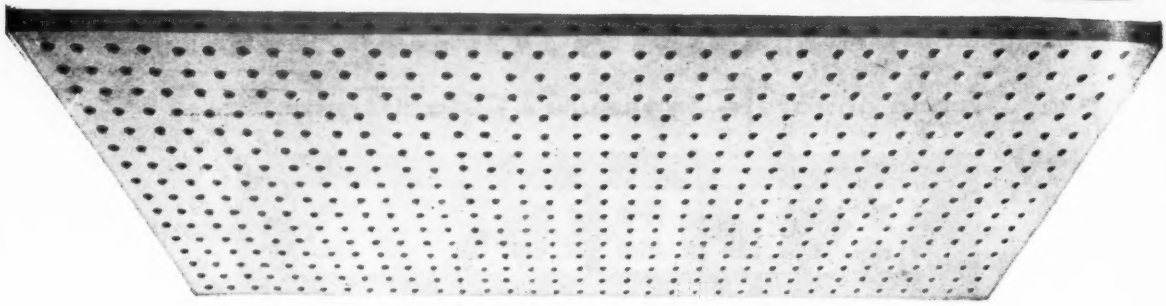
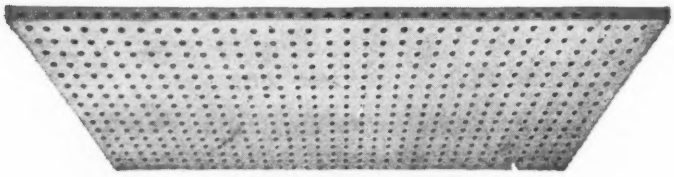
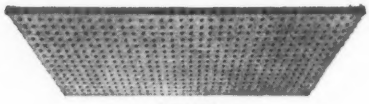


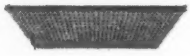
reduces noise to an



undisturbing



level



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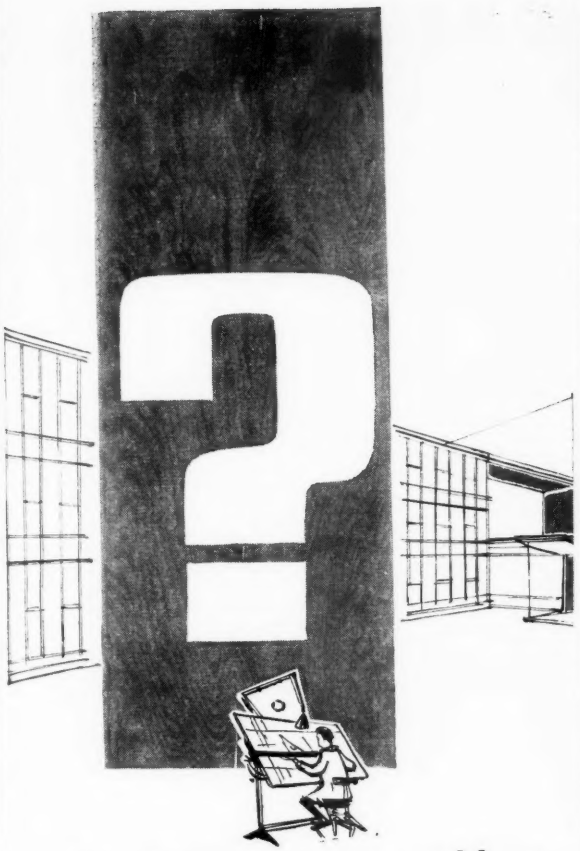

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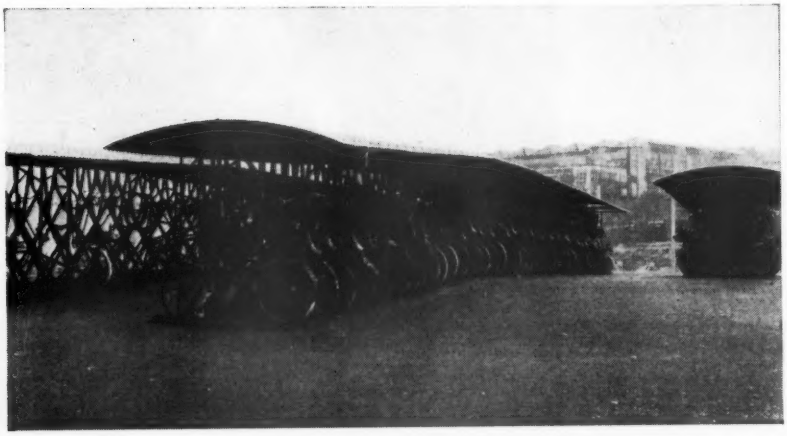

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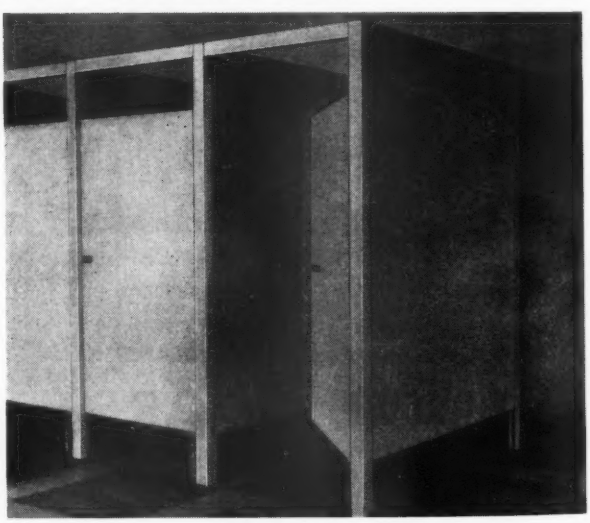

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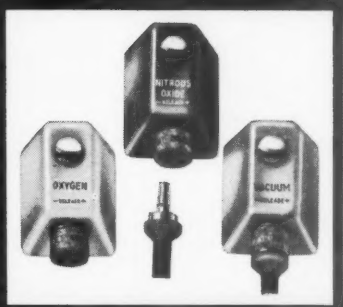

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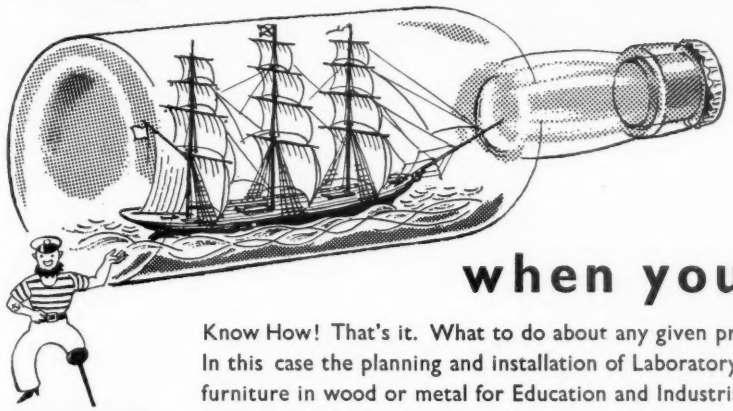

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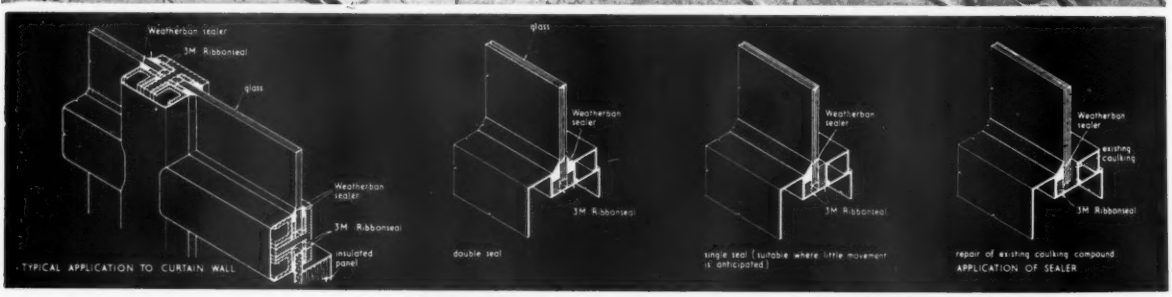

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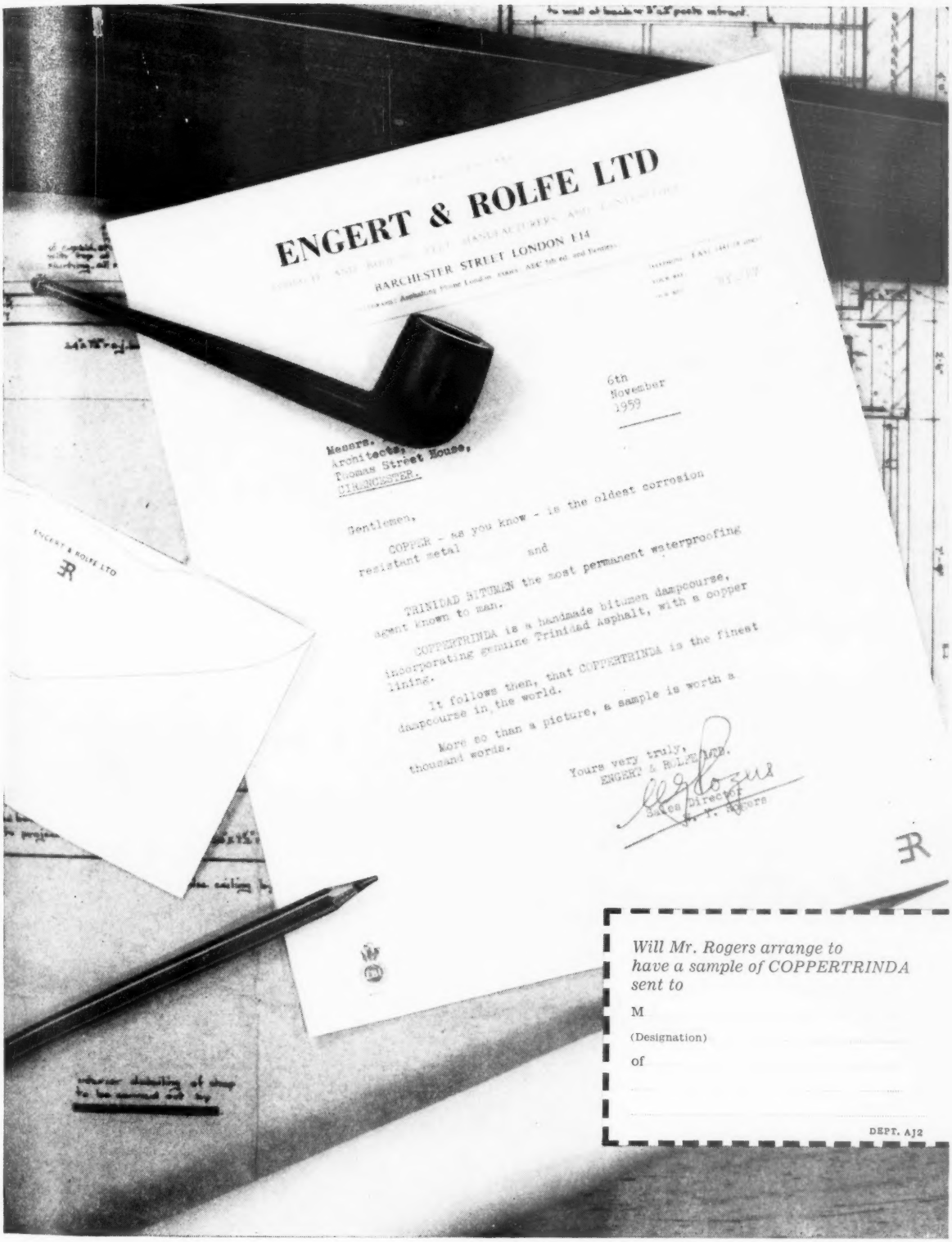
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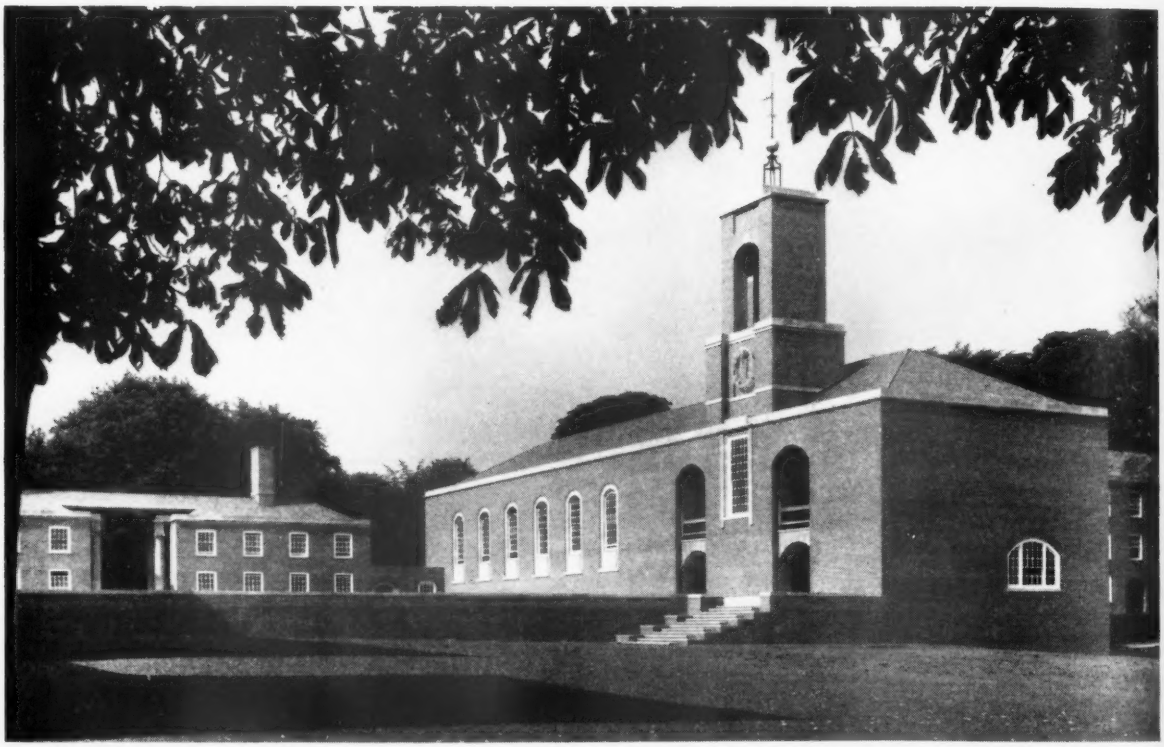
For completion on time



Architects: Horace Farquharson, F.R.I.B.A. Donald H. McMorran, A.R.A. George F. Whitby, M.B.E, F.R.I.B.A.

Clock Tower and Great Hall, Cripps Hall of Residence, Nottingham University. The scheme included seven blocks, a warden's house and ancillary buildings, which are grouped round two quadrangles. Completion of this important project on time was ensured by the careful organisation and planning which are an integral feature of every project, both large and small undertaken by John Laing and Son Limited.

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